Architectural Library MAY 4 1922

THE BUILDER

A JOURNAL FOR THE ARCHITECT & CONSTRUCTOR

VOLUME CXXII. No. 4133. Eighteenth Year.

FRIDAY, APRIL 21, 1922.

REGISTERED AT THE GENERAL POST OFFICE AS A NEWSPAPER.

PRICE NINEPENCE.

"I have seen several different forms of Mr. Boyle's 'Air-Pump' Ventilator in actual operation, and have much pleasure in testifying to their efficiency."—LORD KELVIN.

Boyle's

LATEST "PATENT "AIR-PUMP" VENTILATOR.

Has DOUBLE the EXTRACTING POWER of Earlier Forms

Awarded the £50 Prize with Grand Diploma (only prize offered), at the International Ventilator Competition, London. Highest Award, International Ventilator Competition, Paris, Two Gold Medals.

"Mr. Boyle's complete success in securing the required continuous upward impulse is testified to by high authorities."—GOVERNMENT REPORT (Blue Book)

ROBERT BOYLE & SON,
Ventilating Engineers,
64, HOLBORN VIADUCT, LONDON.

"Messrs Robert Boyle and Son, the founders of the profession of Ventilation Engineering, have raised the subject to the dignity of a science."—REPORT ON THE VENTILATION OF THE LONDON CUSTOM HOUSE

TILES BRYON & CO., 9, Southampton Street, 'Phone: Museum 6783 W.C.1.

ARTESIAN SILENT AUTOMATIC WELLS
LONDON HYDRAULIC POWER CO.
HATFIELD STREET, S.E.1. HOP 4540.

The LIFT & HOIST Co. Ltd.
Hand Lifts and Revolving Shutters.
PRINCE STREET, DEPTFORD, S.E.8
'Phone: New Cross 49 (two lines).

WAYGOOD-OTIS LIFTS
ELECTRIC, HYDRAULIC & HAND POWER.
54 & 55, FETTER LANE, LONDON, E.C.4
62 & 63, LIONEL STREET, BIRMINGHAM
and Principal Provincial Cities.

MARRYAT-SCOTT LIFTS
28, HATTON GARDEN LONDON, E.C.

THE EXPRESS LIFT CO., LD.
GREYCOAT STREET WORKS, WESTMINSTER S.W.1
ALL TYPES.
Phone: Victoria 6115 (3 lines).

HOT WATER INSTANTLY
NIGHT or DAY
EWART'S GEYSERS
346 EUSTON ROAD, LONDON, N.W.
Price List on application.
Telegrams: GEYSER, LONDON 'Phone: MUSEUM 2570

LIFTS OF ALL TYPES
SMITH, MAJOR & STEVENS, Ltd.
LONDON & NORTHAMPTON.

TITAN LIFTS
30, HIGH HOLBORN, W.C. Telephone—CHANCERY 7061

LIFTS A. & P. STEVEN
PROVANSIDE WORKS, GLASGOW.
London Office: 10 Charles Street, Blackfriars Road, S.E.
Manchester Office: 12 Charles Street

SEYSSEL
ASPHALTE ROOFS
RAGUSA ASPHALTE Co., Ltd.
TREDEGAR ROAD, LONDON E.3.

LONDON OFFICE: 29/30 High Holborn W.C.1.
A. Edmonds & Co. Ltd. DISTINCTIVE SHOPFITTERS
HEAD OFFICE & WORKS: 89/101 Constitution Hill, Birm.

JOISTS — ROUNDS
NEW ROLLED STEEL MILD STEEL—for FERRO-CONCRETE
ALL SIZES
PROMPT DELIVERIES FROM STOCK AND WORKS
HELICAL BAR CO. 72 VICTORIA STREET, S.W.1
Telegrams: "HELISTELBA, SOWEST, LONDON." Telephone: VICTORIA 1940 1941

PENROSE LIFTS, Ltd.
239/241 SOUTHWARK BRIDGE ROAD, LONDON, S.E.1

PARTITION SLABS
PHONE: PARK 1730
CONCRETE SLABS CO.
Wood Lane. SHEPHERDS BUSH

HEATING
ROSSER & RUSSELL, Ltd.
(MAYFAIR 5210)
37 DUKE STREET, OXFORD STREET, LONDON, W.1

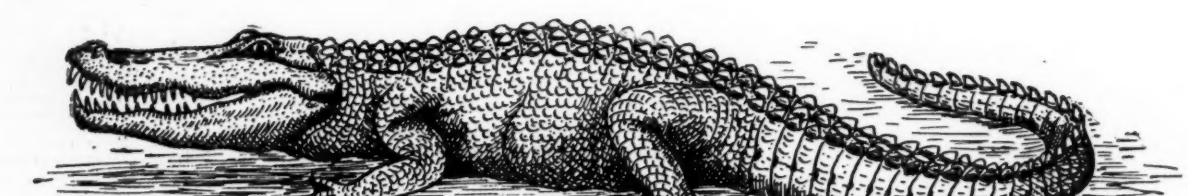
"FIROLA"
For party-wall openings.
You will specify "Firola" Doors, after perusal of our Reference Book 'S.2.'
HASKINS
Saml. Haskins & Bros., Ltd.
OLD ST. LONDON, E.C.1

MODELS
Executed by JOHN B. THORP,
98, Gray's Inn Road *(next to Holborn Hall)*,
'Phone: Holborn 1011. LONDON, W.C.1

LIFTS
WM. WADSWORTH & SONS, Ld.
BOLTON.

ROOFING SERVICE

Every Building depends upon the efficiency of its Roof!



HAVING roofed many of the largest buildings in the country with our

ALLIGATOR ASBESTIC CORRUGATED SHEETING and FLAT ASBESTIC SLATES,

we have decided to form separate departments to deal with

QUARRIED SLATES
CLAY TILES
ROCK ASPHALTE

We can advise Architects and others on all matters concerning Roofs, and undertake to carry out work with universal satisfaction.

FULL PARTICULARS AT

STAND 60 ROW D
Building Trades Exhibition, Olympia

OR FROM

BRITISH ROOFING COMPANY, Ltd.

PREMIER HOUSE, 150, SOUTHAMPTON ROW, LONDON, W.C.2

Telephone: MUSEUM 5092 Telegrams: "ROTAGILLA, WESTCENT, LONDON"

Contractors to the British H.M. Office of Works, Admiralty, Ministry of Munitions, Air Ministry, and American, French and Italian Governments

THE BUILDER

A JOURNAL FOR THE ARCHITECT AND CONSTRUCTOR.

WITH WHICH IS INCORPORATED "THE BRITISH ARCHITECT."

VOL. CXXII.—No. 4133. APRIL 21, 1922.

"FRILLS" IN HOUSING.

WHEN the opportune moment arrives for the speculative builder to commence operations, we are given to understand from the newspaper reports that he will cut out many of the "frills" which he seems to find in the Government houses. It sounds an easy way of disposing of a great problem, but in building affairs as in everything else it is the one with his ear to the ground who contrives to be a little ahead of the public while pretending to cater for its needs. The financial failure of the Government housing scheme has given the speculative builder his opportunity to criticise, but in doing so he has made it evident that he is not judging matters from a common standpoint. In spite of every excuse which has been made by the Ministry of Health, the speculative builder knows as well as anyone that the housing scheme did not fail in matters of detail or design. The conditions were abnormal, and the simple solutions of the speculative builder seem all very facile, though difficult to accept.

There may be a difference between us regarding the speculative builder's definition of "frills," but if there is a common meaning to the word we should say that it represents the hall-mark on many houses built for speculation. If we want to look for frivolous and undesirable ornament, expensive to fix and an expense to maintain, we have it in abundance, for the speculative builder's handiwork can never be mistaken. It is the proud boast of the speculative builder that he was responsible for 90 per cent. of the working-class houses in this country, but it is nothing short of the truth to say that, though the houses have generally been financially successful, they represent too often a dreary monotony of ugliness and vulgarity.

Projecting eaves, lower-pitched roofs, gables, pantile roofs, and well-proportioned windows may possibly represent "frills" to the speculative builder, but are they not counterbalanced—in cost, at least—by his undesirable ornament, coxcomb ridges, fussy bargeboards and hideously-coloured leaded glazing? If he seriously intends to effect a financial saving he would be well advised to abandon his own notion of ornamentation; if he has any regard for the amenities of life he should seriously study these State houses. The accommodation of the houses, the density of the houses per acre, and the general lay-out may be regarded as "frills" beyond the dreams of the speculative builder, but experience must prove whether these conditions can be obtained and at the same time prove a social and commercial success. We cannot help wondering at the builder's airy contempt for the "twelve-houses-to-the-acre," and why he should be so concerned at the superior style of these houses. He has had his chance, and has demonstrated how many small houses and small gardens can be crowded on a very small space, and incidentally how the value of land can be increased. And, after all, he displayed his shrewd judgment in selling his houses at cost price and taking his profit by creating an annual rent upon the land. We know that the problem of the house and garden leads to enormous surface expansion, which brings us to one of the most difficult mechanical problems of the modern city—the question of human conveyance with safety, comfort, speed, and cheapness. Do we believe that the speculative builder is thinking of these great problems when he finds fault with the municipal houses, or that he is thinking of himself? What he thinks about the social problems of life is of the smallest consequence; what he knows about the practical economics of house building is of the largest possible moment.

It is no left-handed compliment to the speculative builder to say that he does himself less than justice in his attempts to justify his houses by condemning those erected by the Ministry. If we overlook the economic value of health and happiness, the whole problem of commercial housing is fixed by the rentals which the occupants can pay. No reason has hitherto been put forward why the cost of building should not have increased along with all other trades, but many reasons have been put forward why the rents should not have been raised to show an economic return on capital. It is therefore obvious to anyone that the housing scheme could never be a commercial success; but it is neither fair to the mentality of the public nor to the houses to pass judgment upon their financial failure, knowing that they were built under ephemeral conditions of State control of rentals, and at a time when there seemed no limits to a rising market in wages and materials in every industry. The housing scheme is admittedly a commercial failure, but is the whole conception wrong on this account, or was it merely a question of building at the wrong time?

It is unfortunate for the future of the housing scheme that it became a political question, as it can be seen clearly that an economic failure was certain, no matter what type of house was built. Unless this point is understood we cannot expect a fair criticism upon the houses or their surroundings. In admitting that the speculative builder has proved himself to be a commercial expert upon housing for the working classes, is there any reason to believe that during the violent fluctuations in prices and wages which we have experienced he alone possessed that financial perception which seems to have been denied to everyone engaged in other industries? Had the Rent Restriction Act not been in force it is difficult to see how he could have avoided the fate which has overtaken almost everyone in trade; and by all the laws of economics he has had a merciful escape from financial ruin simply because he could not build. As the result of a national promise the nation is shouldering a huge annual loss on houses, but the reason is obvious to a layman. We stress this point because it seems to us to represent the one great factor in the economic failure of the houses, so much so that it is difficult to see how anyone can dogmatise upon the future development of houses and rentals or compare values with the speculative builder's houses until a stabilised level of costs has been established. The speculative builder has avoided making mistakes by refraining from building, and it would appear from his criticisms that his immunity from loss during his enforced rest has inclined to make him a little less tolerant than he would otherwise have been.

Included amongst the "frills" is the architect. That the speculative builder's houses were provided on economic lines without architectural participation is common knowledge, and is a statement which, by constant repetition, has been vested with authority and accepted as a classical example of cause and effect. The inference is that the absence of the architect would seem to connote the economic success of the houses, whereas the truth is not that the work was beyond the scope of the architect but that it was considered to be within the scope of anyone whose interest in the houses was solely a financial one. As a specialist in the supply of low-rented houses, he has never been bothered with the altruistic ideas of the housing reformer, and he never had to contend with the academic outlook of a Ministry of Health.

If we accept the statement that the speculative builder has supplied what the public wanted, we are accepting a philosophy which does not distinguish between wants and needs, whereas the true answer perhaps lies in his other statement that he knows better than anyone how to provide most quantity for least cost. It opens up an elaborate discussion in philosophy when we try to determine our moral responsibility for many things in our social life with which we disagree when we claim that they are the product of their own volition, and that we had no choice in their development. So that, in discussing the genesis of the speculative builder's house, we are forced back to the old problem—Is the Age made by the Man or the Man by the Age?

It is certain that the speculative builder is a necessity, and that before long he will be at work again. Housing is an immense problem, and, as much depends upon his outlook, we had hoped that it would be wider and more sympathetic. At the moment we are not convinced that he realises either the problem or the real danger, and we note that the public Press has already detected and condemned his implication that good design and a decent lay-out are extravagances.

NOTES.

The State Architect.

The correspondent who wrote on this subject in our columns last week seems to have built his argument on a misreading of what we said, and what we gather to have been the view of Mr. Maurice Webb. It was never for a moment suggested by us in our comment on Mr. Webb's speech that architects should "refuse to assist the Government"; on the contrary, our whole desire is that they should assist the Government in the best way, free, so far as possible, from any trammels in doing so. In a further paragraph the writer went on to say that it was not to be supposed that the Government would give up building hospitals, schools, and houses "merely because competent and qualified architects refused to help." But we never suggested that they should do so, and we are only concerned that the assistance should be given in the right way. Our point is that, far from the independent architect refusing to help, the Government gives him very little opportunity to do so. Because, for the freedom of architecture, we do not think it should come under the control of a Government department, that is no reason why architects should not assist the Government, and to suggest any intention by architects to "boycott Government work" has, so far as we know, no foundation whatever in fact. Our protest against the growing pressure of bureaucracy is another thing, and we are glad to note that the writer finds that to be "natural" and "possibly wholesome."

The First Commissioner of Works.

We are glad to see that Earl Crawford and Balcarres, the First Commissioner of Works, has been advanced to Cabinet rank. It is very gratifying now to have Ministers in charge of the important Works Department who have been particularly selected for their especial artistic attainments and are not simply politicians. One of the first of what we may call the new school was Lord Plymouth, who since leaving office has done most valuable work as the President of the London Society. Lord Crawford had the advantage of working with Lord Plymouth when in office, so has had considerable experience of the work of the Department. It is apparent from the proceedings of the House of Lords that he has many things to attend to besides the Office of Works. This seems unfortunate, as the work of that Department, we should think, is enough to take the entire attention of a Minister.

Our Present Housing Policy.

"The most illuminating example of the inevitable result of attempted State interference with economic laws which may be furnished for many a generation" is Sir Kingsley Wood's definition of the Government's housing policy. After a summary of what has happened he goes on to ask what is to be our national housing policy now that the private builder is about to occupy his pre-war position and now that we ought to be getting houses for £350. With his suggestion that some means should and might be found to encourage thousands of men to purchase their own houses probably most of us will agree. A sound financial scheme if it could be found would undoubtedly do much to promote stability and thrift. The use of developed land at the disposal of many authorities and a vigorous grappling with the slum problem would be items in a wise policy. Obviously we may hope that the death knell has been sounded for interference with the legitimate development of private enterprise.

The Tabard Garden Estate.

We illustrate this week a new block of tenements bei g erected by the L.C.C. in Southwark. The L.C.C. is carrying out nearly all its housing programme in self-contained houses on the great estates at Becontree, Bellingham, Roehampton, Old Oak, White Hart-lane, and Norbury, and it is building tenements only where the exigencies of the situation render self-contained houses out of the question, and where the surroundings are such as to ensure an ample allowance of sun and fresh air. The experiences of Scotland and Germany, where tenement dwellings are far more usual than with us, show that this policy of reducing the number of tenements to a minimum is sound, and it should be possible, when the transport and industrial developments of our great cities are under a more unified control, to cease building high tenements altogether.

An Improved Standard of Tenements.

The main objections to tenement dwellings of more than three stories, including the ground floor, lie in the difficulty—one might say, the impossibility—of small children living on

Louis XV Cabinet in the Jones' Collection at the Victoria and Albert Museum.
(*See p.* 591.)

the top floors ever obtaining adequate exercise and fresh air, and in the labour involved in walking up and down so many stairs. These drawbacks have been met in the case of Geoffrey House, which is the block we illustrate, by the provision of an automatic electric lift, which will greatly reduce the housewife's labour in carrying small children and washing up and down an excessive number of stairs. A further advance in tenement design, also incorporated in Geoffrey House, is the arrangement of the two top floors. The top floor contains only bedrooms and the next floor below only living rooms, sculleries, and offices; and the work involved in carrying a lift up to the top is avoided, since the top floor consists only of bedrooms. These provisions for the welfare of the tenants, are very welcome, and will, no doubt, fully pay their way by yielding an increased rental.

Slum Clearance.

The clearance of slums is one of the most formidable problems with which we are faced. Vast slum areas exist in all our large towns, as a legacy from an epoch when building, the formation of roads and the provision of open spaces were left to chance, when each man did what happened to suit his pocket at the moment and was not compelled or even expected to take any other consideration into account. Shortly after his resignation as Minister of Health, Dr. Addison pointed out that, although the war had been over three years, we were still spending £1,000 on armaments for every £1 on slum clearance. These figures speak for themselves, and it is not easy to follow the line of thought which regards them as quite right and proper, but would consider £500 on armaments and £500 on slum clearance as a terrible example of waste. While not wishing to enter into any discussion upon the subject of armaments, we do wish to emphasise the relative importance of reclaiming the slums, which are a disgrace and a menace to the country.

Slum Property Difficulties.

In a letter dealing with the almost heartrending difficulties in dealing with slum property, Councillor W. H. Raffles gives the following apropos of his own efforts in Kensington :—"Slum property has for too long been left in the hands of sub-landlords or middlemen, who have not possessed the necessary money to carry out the requirements of local authorities under the Public Health Acts; with the result that the property has become more and more dilapidated. We now know that we have some hundreds of houses in our borough which can and should be dealt with under Section 28." We are glad to find a councillor writing with knowledge of the facts, though this was to be expected from a councillor who is also an architect. We wish we had more architects serving on our councils.

Trade Signs and Lettering

There is sufficient disucssion at the present time towards co-ordinating and unifying our aims, so leading to a more corporate and therefore a more truly civic outlook, that it would be a good thing if this spirit could exert an influence towards modifying the over-self-assertion in street signs and titles. If some common agreement could be reached whereby such signs were made to conform to an average and commonly acknowledged standard, it would assist much towards making our city streets attractive. It is doubtful whether the fact that we announce the name of our business in larger and uglier capitals than any other trader in the same street can advance our business at all. We are feeling the need for a more corporate sense to influence private interests, and if traders had in view the amenities of the street and the rights of their neighbours, it would deter them from trying to shout them down. We have in mind the kind of announcement of a business, such as may be seen in Holborn, in which lettering of deformed and ugly character and of an enormous size straddles diagonally across the face of the upper floors of the building. To shout our neighbours down is not good breeding, and it is carrying on ideas of business methods, which are in the way of becoming discredited, to disregard the amenities of the street in this way. Where civic duties and interests clash, it is right to forgo those interests, though a higher interpretation will identify them as the same.

The Jones' Collection at South Kensington.

Amongst the most valuable of the many handbooks issued from the Victoria and Albert Museum will be counted the excellent quarto on the furniture of the Jones collection just issued (price 2s. 6d.). The work is mostly of the eighteenth-century French work, the Louis XV and Louis XVI periods being strongly represented. Mr. Jones certainly collected with much judgment and taste, and judging even by the pieces illustrated we see how far a private collector can go. We are told that collections by certain private individuals are almost unknown and unrecorded; if this is so, it is possible that French furniture may be almost as well represented in England as in France. We give, by the courtesy of Sir Cecil Smith, an example of late Louis XV work which has a fine simple strength of effect; it is decorated in marquetry of sycamore, harewood, tulipwood, &c., and mounted in ormulu, whilst on the top is a slab of black-veined marble. The wealth of decorative design which was forthcoming during the eighteenth century offers a great contrast to our own time. We have been living on French work so long that perhaps modern designers have little choice.

War Memorial at Burgage Green, Southwell.

Messrs. Harry Gill & Son, Architects.

Emergency Jobs.

We know many British workmen who are a credit to themselves and their country, and it would be unfair to class with the good average workman some of those who are employed by our authorities on jobs which have been found for them. One who passes almost daily the filling-up of a dump at the cost of the ratepayers for the sake of providing employment has carefully calculated that the wheeling away of each barrow-load of stuff a comparatively short distance must cost at least half-a-crown.

Armenian Architecture.

In April of last year we noticed and illustrated the small exhibition of Armenian architecture which consisted of many views and details by the architect, Mr. A. Fetvadjian, who has made a very long study of Armenian work. A large exhibition of drawings by M. Fetvadjian was opened by Professor Lethaby (as reported on p. 600) at the R.I.B.A. on Wednesday the 19th and remains open till the 29th. This is certainly amongst the best exhibitions which have been seen at the Institute galleries, for it has the twofold merit of exceptional interest both in the subjects and the drawings. The architect's water-colours are delightful in their ease and grace, with an attractive charm of atmosphere and admirable architectural definition.

GENERAL NEWS.

Professional Announcement.

Mr. J. Harold Smith, P.A.S.I., has removed from 39, Lawn-road, Uxbridge, to 160, High-street, Uxbridge (Telephone, Uxbridge 23).

Kingswood War Memorial.

The Kingswood war memorial, the unveiling of which was noted in our last issue, was designed by Mr. Percy Tubbs, F.R.I.B.A., M.S.A., with the assistance of his son, Mr. Grahame Tubbs, and not by Mr. Percy Julius, as stated last week.

The R.I.B.A. Final Examination.

Drawings bearing the name of the architect, in whose office a student works, will not be accepted by the Board of Architectural Education as Testimonies of Study for the Examination of the Royal Institute.

West Hartlepool War Memorial.

Mr. George Bennett Mitchell, M.B.E., D.L. (President of the Aberdeen Chamber of the Institute of Scottish Architects), has been appointed by the West Hartlepool War Memorial Committee to supervise the work of erecting the West Hartlepool war memorial, to the design of the late Mr. Coombes. Mr Mitchell has undertaken the work in order to assist the widow of the late successful competitor.

Westminster Cathedral.

The marble work in the retro-choir of Westminster Cathedral has now been completed and unveiled. It has taken about eight months to put up, and marks the biggest step forward in the decoration of the main walls of the building yet attempted. It is merely a setting, and the mosaic work is yet to come. The work was designed by Mr. John Marshall. The mosaic work in the tribunes has been designed by Mr. R. Anning Bell, R.A., and has been executed by Miss Gertrude Martin.

The Surveyors' Institution.

ELECTION OF PRESIDENT.—The Council of the Surveyors' Institution has elected Mr. John McClare Clark (Senior Vice-President), of Haltwhistle and Hexham, Northumberland, as President for the remainder of the Institution Session, in place of the late J. H. Sabin.

RENT RESTRICTIONS ACTS.—The Council has set up a Special Committee to consider the position which is likely to arise in June, 1923, on the above Acts ceasing to operate, and to report whether any action on the part of the Institution is called for in recommending a renewal or otherwise of the provisions of the Acts or any part thereof.

CITY OF LONDON COLLEGE.—Sir Edgar Harper has been nominated to represent the Institution on the Governing Body of the City of London College in place of the late J. H. Sabin.

The Institution of Civil Engineers.

The Council of the Institution of Civil Engineers has made the following awards for papers read and discussed during the session, 1921–22: Telford Medals to Sir Henry Fowler, K.B.E. (Derby), Mr. H. N. Gresley, C.B.E. (Doncaster), and Mr. H. F. Parshall, D.Sc. (London); a Watt Medal to Mr. William Willox, M.A. (London); an Indian Premium to Mr. W. G. Royal-Dawson (London); Telford Premiums to Mr. A. W. Rendell (Bournemouth), Mr. W. F. Stanton, B.Sc. (Chile), and Mr. A. C. Walsh (Chile). The Council have also made the following awards for papers printed without discussion in the *Proceedings* for the Session, 1920–21: A George Stephenson Medal to Mr. J. H. Taylor (Buenos Aires); Telford Premiums to Mr. F. H. Hummel, M.Sc. (Belfast), Mr. E. J. Finnan, M.Sc. (Belfast), and Mr. Herbert Chatley, D.Sc. (China); and a Trevithick Premium to Mr. G. E Lillie, F.C.H. (Reigate).

Exhibition of Contemporary British Architecture.

An exhibition of contemporary British architecture will be held in the Galleries of the R.I.B.A., from November 1 to December 16, this year.

The following arrangements have been made for the organisation of the exhibition:—

All architects in the British Empire are invited to submit their work. Work that has already been exhibited elsewhere will not be excluded. Exhibits must be confined to works executed or illustrations of works projected since the beginning of the twentieth century. All exhibits must be framed and may be glazed. There is no limit to the number of works which may be included in one frame. Models will not be accepted for exhibition. Exhibits may consist of photographs, elevations, perspective drawings, and small scale plans. The exhibitor may choose whether he will send any or all of these. Photographs of drawings are admissible. As the available wall-space is very limited it is anticipated that not more than 15 sq. ft. of wall-space (inclusive of frames) can be allotted to any exhibitor. The last day for the receipt of drawings and photographs will be October 7, 1922. The exhibition will be open to the general public (free), between the hours of 11 a.m. and 6 p.m.

COMPETITION NEWS.

Auckland War Memorial Competition.

Designs for a war memorial building, for the Auckland (N.Z.) War Memorial Committee and the Auckland Institute and Museum. Sending-in date, June 30 from London. (See our issue for September 2, *et seq.*)

Further answers to questions in connection with this competition state (1) that the difference between the areas of the ground and first floors may be added to the area required for future development or given as extra storage space at the discretion of the competitors; (2) lavatories are to be disposed upon the several floors, for the use of the staff and public, but the public lavatories need be upon one floor only, at the discretion of the competitors; (3) the superimposed load of each floor may be assumed as that required by the L.C.C. by-laws for museum buildings, viz., 225 lb. per sq. ft.

A VIEW OF ONE OF MR. DE KLERK'S MUNICIPAL HOUSING SCHEMES AT AMSTERDAM. (*See p.* 594.)

Newport (Mon).

FOR THE WAR MEMORIAL COMMITTEE.—Designs for a cenotaph. Sending-in day, May 1. (See our issue for March 31.)

The conditions of this competition are unsatisfactory; the Competitions Committee of the R.I.B.A. is in negotiation with the promoters in the hope of securing an amendment.

Dundee.

FOR THE DUNDEE WAR MEMORIAL COMMITTEE.—Designs for a war memorial. Sending-in date, April 30. (See our issue for January 6.)

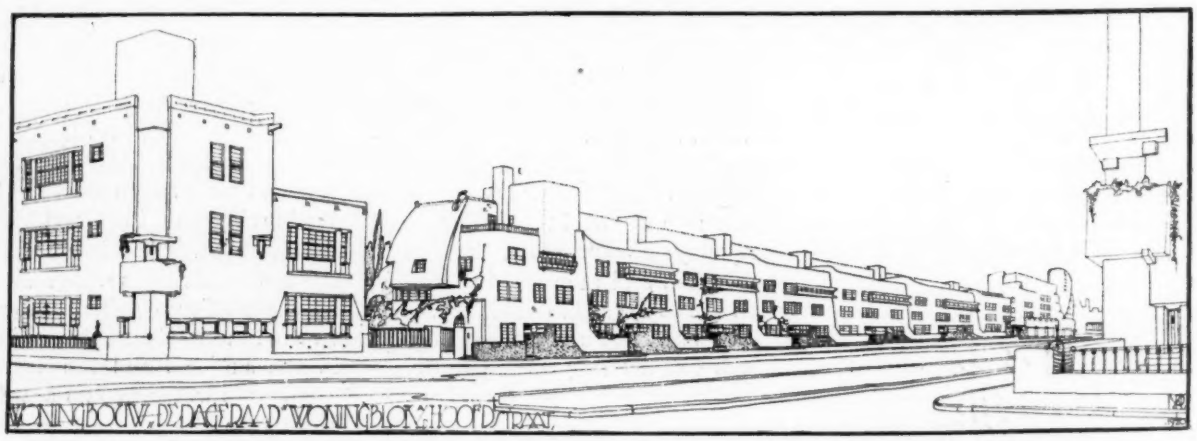
Ipswich.

FOR THE WAR MEMORIAL COMMITTEE.—Designs for a war memorial. Sending-in day, June 17. (See our issue for March 2.)

A copy of the conditions of competition may be seen at the office of *The Builder*.

Other Competitions.

Other competitions still open include the following (the dates given are, first the sending-in date, and second the issue of *The Builder* in which full particulars were given):—Trujillo (Peru) monument (June; Jan. 13); Colour Competition (May 1; Feb. 17).



THIS VIEW WELL ILLUSTRATES THE NEW DUTCH ARCHITECTURE IN WHICH MR. KRAMER, MR. DE KLERK, AND MR. GRATAMA AND OTHERS ARE ENGAGED. (*See p.* 594.)

CORRESPONDENCE.

Unification and Registration.

SIR,—We did not "misquote" Mr. Butler either "deliberately" or unintentionally; our quotation was perfectly accurate. He spoke in favour of admitting all architects into the Institute, and we gave an extract from his speech necessary to illustrate his views; he now gives you a longer quotation, which we welcome as it has the effect of emphasising those views, and so he helps us. We wish we could have given the entire speech of every member we quoted, but those speeches can be seen in the *Journal*, to which we referred your readers.

A. W. S. CROSS,
H. D. SEARLES-WOOD,
Vice-Presidents, R.I.B.A.,
GEORGE HUBBARD,
SYDNEY PERKS,
Hon. Secs., R.I.B.A. Defence League.

[*** In the letter in our issue for April 7 the ellipses between the words "said" and "even" were inadvertently omitted.]

Architects and the Speculative Builder.

SIR,—I have read Mr. Wilfrid Travers' article on the above subject with interest and, generally speaking, I am in agreement with him. I may say at once that I appear to have fallen into the pit reserved for those who coin new words or phrases. In no less than four places Mr. Travers indicates, in connection with my proposal, that a profit-sharing partnership between architect and builder is undesirable. Any such arrangement appears to me to be so undesirable that it did not occur to me when I wrote the article that the words "an architect-builder coalition" would be open to such construction, but I now see that they can be so interpreted, and am glad to have an opportunity of making clear what I really meant.

Mr. Travers says: "The architectural profession . . . has undoubtedly secured a better standard of work in those schemes which have been under architectural control than had been known before in artisans' dwellings." It is in order to perpetuate this improvement that I suggest that architects should continue to interest themselves in housing, not by sharing profits, nor by entering into any kind of partnership, but by letting it be known among builders that architectural advice is available at rates that are not prohibitive; for it must not be forgotten that the disregard with which architects have been treated in the past, so far as housing is concerned, was due, as Mr. H. R. Selley has pointed out, to the absence of a financial margin out of which to pay for "architects' fees or costly design," and it was admittedly the belief that architectural advice was a costly luxury that prevented it from being given where it was most urgently needed. The R.I.B.A. scale of fees is intended to be elastic in its application, and it is not intended that fees should be out of proportion to the work done, but the scale does not specify what reduction would be admissible when the architect does not undertake responsibility for supervision. The only form of "coalition" I was proposing was one that would secure that architects should have their rightful share in house design by the introduction of an arranged and specified interpretation of the existing scale of fees that would meet with the approval of both parties. Builders should not be called upon to pay fees for work which, in the peculiar circumstances that differentiate housing from all other forms of architecture, the builders would not desire architects to undertake.

It is my belief that if builders knew exactly the fees for which architects would advise on the preparation of a lay-out, and would provide ¼-in. type plans with skeleton specifications, architectural advice would usually be obtained, to the great and lasting benefit of English architecture, and this does not imply any slur upon builders, whose functions and training are of a different order. I do not say that this form of architectural advice, in which the architect really would act as a consultant, is the ideal solution to the problem, but can it be doubted that it would be better for architecture generally than the alternative of letting things slide back into the old groove, where the architect and his art were completely ignored?

As I before premised, there may be other and more satisfactory ways of attaining the end that every architect and every lover of architecture must desire, but we cannot stand still. There can be nothing derogatory to a professional man in being a consultant. An eye specialist, for a lump sum fee, gives advice as to the form of treatment he recommends, but he undertakes no responsibility in respect to the carrying out of his instructions, and there can be no valid objection to a scheme under which the architect would occupy a similar position. It would then be for the architect to show the builder that architectural treatment could be supremely economical, but that it could at the same time raise the value of any property to which it was applied.

MANNING ROBERTSON.

Obsolete Building By-laws.

SIR,—Whilst I, in common no doubt with many persons interested in building, was glad to read Mr. Robertson's article on by-laws in your issue for April 7, I suggest that he might have made more clear that our troubles spring from two distinct causes, namely, defects in the governing Acts of Parliament and defects in the by-laws adopted by local authorities to give effect to those Acts. The former defects can only be cured by Parliament itself; the latter the local authorities could (if they would) themselves cure without difficulty. As practical men I suggest that (whilst endeavouring to get new legislation) we should bring all the pressure we can to bear upon local authorities to make the best of the law as it is.

In Paragraph 30 of its Report, the Departmental Committee to which Mr. Robertson refers, says: "Since our duty is to examine 'the control at present exercised by local authorities,' we have not felt it our business to consider the suitability or otherwise for their purpose of the models which are solely intended for local authorities' guidance and assistance, and have no force of their own. . . . We are concerned here only to place it upon record that much of the criticism laid before us by architects and others . . . referred to by-laws not in accordance with the models. . . . We feel, therefore, that (while there may be legitimate differences of opinion as to particular clauses) it is broadly true to say that if all local by-laws could be brought up to the model standard almost all the complaints we have received which really have to do with by-laws would have been avoided. . . . We have found few instances in which the particular requirement was to be found in the model series of the Local Government Board, and in which, therefore, a remedy would not have lain in the adoption of by-laws on the lines of one or other of the models. And not only have the Board done all they could under the existing law to keep the model series up to the standard of the best modern building practice (in which the evidence before us seems to show that they have in the main succeeded), but, especially and increasingly in recent years, they have made great efforts to persuade local authorities also to keep local by-laws up to date."

The Committee which thus reported contained, among twelve members, only one official of the Board, and he died before the Report was finished (see paragraph 126), so the remarks above quoted can hardly be attributed to official bias.

When will architects and others concerned unite in the localities where they practise and bring pressure to bear on the local authorities to get local by-laws brought up to date? The governing statutes may be, and are, imperfect, but much could be done even as they stand, and persons interested in the subject could obtain the most recent issues of the model series, together with other information on the subject, from the Ministry of Health.

Let me say, in conclusion, that I am not and never have been in the employment of the Ministry or the L.G.B., but having given a good deal of attention to this matter I am anxious to see some organised efforts towards improvement, in which *The Builder* might be a powerful influence.

E. M. WEI
Weston-super-Mare.

The Mill Lock Arch.

SIR,—Nearly half-a-century ago Dr Erasmus Wilson immortalised his name by placing "Cleopatra's Needle," from Egyptian sands, on the Thames Embankment. Could not a worthy imitator be found similarly to transplant from Thames mud to another continent and a suitable situation the priceless antiquity of the sole remaining arch of Old London Bridge, now threatened with ignominious destruction?

"O. B. I. T."

War Memorial at Shire Hall, Nottingham.
MESSRS. HARRY GILL & SON, Architects.

HOUSING IN AMSTERDAM.

BY EWART G. CULPIN.

When we talk about difficult housing sites in this country, and the impossibility or undesirability of building on low sites, we can have little conception of the extraordinary conditions which face the architect not only occasionally but on the bulk of housing sites in a great part of Holland. To appreciate this point the reader must imagine a site perhaps ten or more feet below sea level, with canals adjoining whose water is eight or more feet above the ground. The soil itself is wet and boggy, and upon it must be pumped thousands and thousands of tons of sand, to a depth perhaps of several metres, half of which will by its own weight sink into the soil; next piles of 24 to 45 ft. length must be driven at about one-yard intervals over the whole house surface; and then a concrete raft is formed. The cost of these operations is sometimes half as much as the actual cost of the house. Then, for example, in the Amsterdam area there is nothing in the earth which can be used for building purposes—no brick earth, no gravel, and not even a stone; everything must be transported to the site.

The city of Amsterdam, "the Venice of the North," as its admirers call it, with its wonderful system of canals and its protective dykes, possesses without doubt the most remarkable buildings of recent times. Its architects are hampered by no adhesion to any school of design, and they are all engaged in feeling out towards a new Dutch school. At the outset this tendency was derived from a similar source to the modern German school, but its development has been more intensive, while the quest has proceeded farther and its results are now becoming increasingly apparent. The new shipping offices are staggering in their conception, bewildering in their attention to detail, and magnificent in their execution. A new school and some of the new housing schemes share with these buildings a distinction in brickwork which is likely to remain unchallenged for many years. Indeed, one is tempted to say that the genius of the architect is as much shown in being able to get the ordinary workman to carry out his ideas in brick and mortar as it is in the amazing unconventionalities which he has conceived.

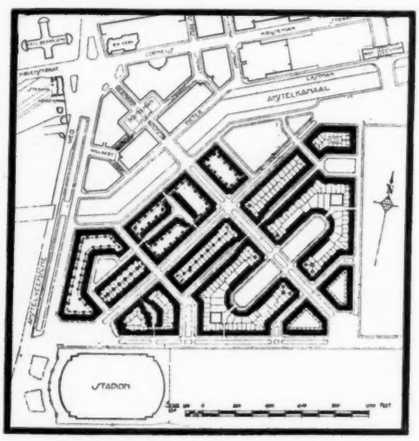
The population of Amsterdam on December 1, 1921, was 683,400, living in 153,702 dwellings, the great bulk of which are tenements or apartment houses, the single family house not coming into use until emergency dwellings were erected during the war. Much of the accommodation was very circumscribed and much of it very bad, so that on January 1, 1922, the estimate of houses required was over 20,000. The following table shows what has been done during the past few years:—

	1918	1919	1920	1921
Private builders without subsidy	130	132	317	299
Private builders with subsidy	—	—	—	536
Municipal—permanent	—	667	123	461
Municipal — semi-permanent	450	184	—	284
Public utility societies—workmen	821	989	297	1,380
Public utility societies—middle-class	—	—	—	218

At the present moment there are 8,560 houses in course of building, distributed as follows:—

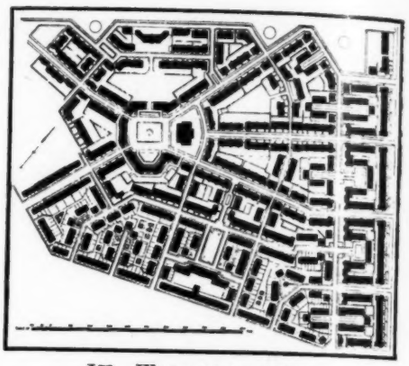
Private, with subsidy ...	2,903
Private, without subsidy ...	260
P.U.S.—workmen	3,019
P.U.S.—middle-class	589
Municipal—permanent ...	1,058
Municipal—semi-permanent ...	731

The total number of houses erected or in course of erection by public utility societies is 10,423, at a cost of about eighty million florins, while the municipality has built or has in building 6,923, at a cost of thirty million florins. These figures cover the period from 1907.



VIII—The Stadium Site

It will be noted that a great proportion of the building work is being done by societies of public utility, as is the case in Belgium, and the tendency is to encourage further enterprise in this direction. But although these societies are regarded in this country as co-operative, there is nothing of that as between the various types of society in Holland. They are not content with having one society, even when only one site is concerned. They have religious and political difficulties which extend far beyond the parliament and council house and the cathedral and church: they take these things seriously. So you actually have cheek by jowl a Catholic society, a Protestant society, a Clerical society, a Socialist society, a Bolshevik society, and so on. Wherever a Socialist society starts, there in a short time comes the Catholic, to counteract the political effect of the new voters, and the competition in this direction seems to be working out well from the point of view of house provision.



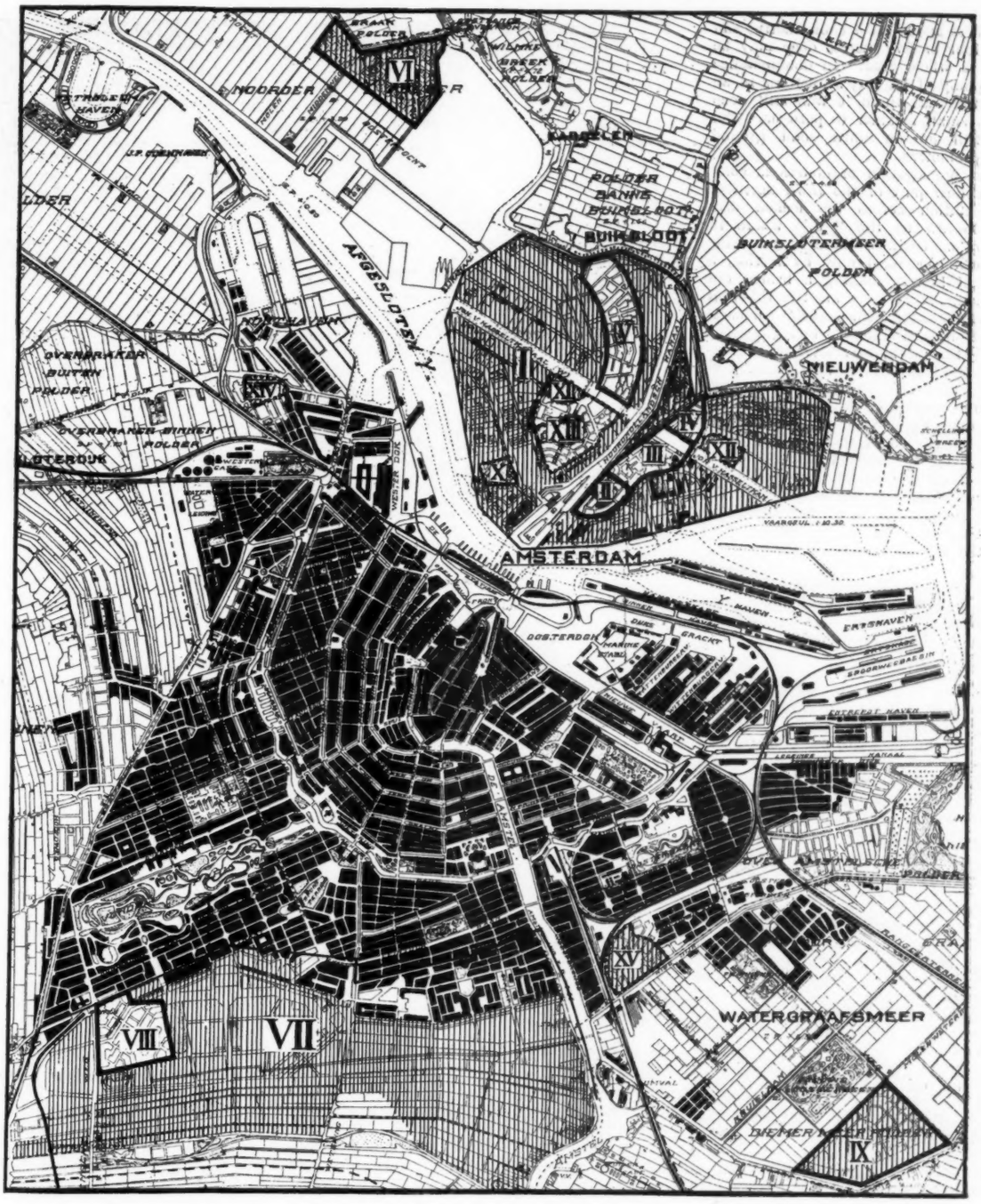
IX—Watergraafsmeer.

Amsterdam's housing problem, it may therefore be seen, is an acute one from every point of view. The city is fortunate in possessing as its Housing Director an official who is not only a skilled technician but a practical housing reformer and idealist combined. Mr. Arie Keppler, C.I., has been responsible for some remarkable achievements, and the projects he has in hand will certainly achieve the result of making Amsterdam the Mecca of those who wish to study the development of modern architecture. With all its attention to the housing of the people, Amsterdam has not learned how to house its own Council and officials. Its Town Hall is a doll's house, and the staff of the Director of Housing is accommodated in five different parts of the city, considerable distances apart. With 8,000 houses in building, and preparing for 20,000 more, Mr. Keppler is a busy man, but he gladly gave me a day of his time recently for the purpose of visiting the housing schemes. That visit evidenced the attention to detail, the sense of the beautiful, and the appreciation of the practical which has marked his work for the city.

There is a great difference between various sections of the work—from the magnificently conceived "complex" of the Stadium, the interesting architecture of Mr. Jan Gratama at the Extension site, the conventional cottages of Dr. Berlage, to the semi-permanent dwellings at Oostzaan is a far cry, but the difference is also that of a site of great value, adjoining a new arterial road of regal proportions, and one in the polders to the north just included in recent extensions of the city.

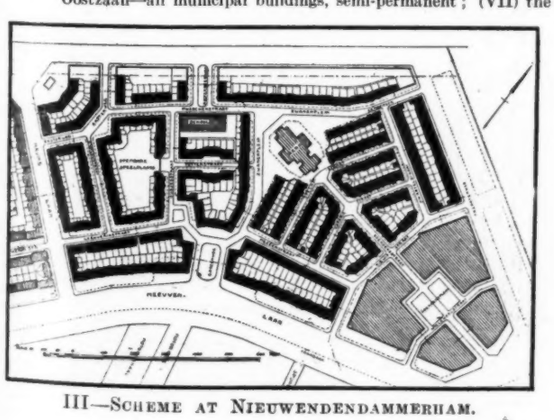
There are fifteen principal schemes, among which the eight thousand odd houses are divided, and as the plan on p. 595 shows they are distributed in all directions around the city, mainly in the area recently added in the extension of the municipal boundaries. A great proportion is in the polders or drained marshes, and this area is kept drained by the canals, while the sea is kept out by the dykes and sea walls. On the way to Oostzaan I was shown the area which in 1916 was entirely flooded by the rupture of the sea dyke, resulting in the destruction of hundreds of houses. But again the work goes on: sand is being pumped and foundations prepared as though there were never such a thing as possible inundations. The cost of

VII—Southern Extension Scheme. Plan by Dr. Berlage.

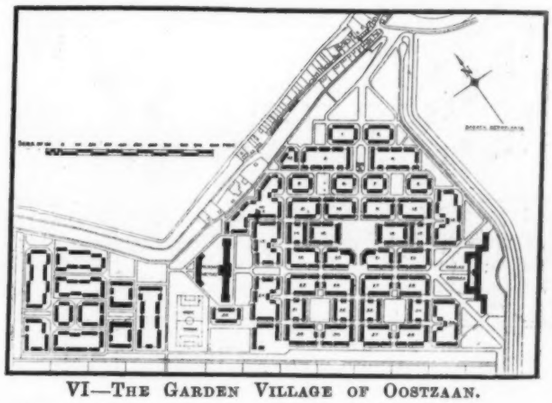


PLAN OF AMSTERDAM SHOWING THE POSITION OF THE VARIOUS HOUSING AND TOWN PLANNING SCHEMES.

[(I) Town extension scheme to the north of the "Y"; (II, III & IV) three schemes at Nieuwendendammerham—these were all built since the beginning of the war by public utility societies; (V) Buiksloterham, a drained marsh, now raised above canal level—partly P.U.S. and partly municipal; (VI) the garden village of Oostzaan—all municipal buildings, semi-permanent; (VII) the big town-planning scheme in the south, containing the great scheme of (VIII) the Stadium; (IX) Watergraafsmeer, just being prepared for building; (X) temporary municipal dwellings; (XI & XII) semi-permanent houses; (XIII) permanent houses; (XIV) the scheme containing the municipal houses by Mr. de Klerk; (XV) the "Transvaal" site, with houses by Messrs. Berlage and Gratama.]



III—SCHEME AT NIEUWENDENDAMMERHAM.



VI—THE GARDEN VILLAGE OF OOSTZAAN.

Housing in Amsterdam.

pumping sand is about 4s. a cubic metre, and as much as four or five metres deep may be pumped over a whole area. In one instance I saw the tipping of the city's dustbins in an old arm of the sea where it was still deep enough for a small steamer to pass us. But this work will go on until solid ground rewards the promoters.

The largest aggregation of houses is comprised in the new part of the town north of the central station across the locked arm of the sea known as the "Y," where in addition to other troubles there is the wide expanse of water, crossed only by ferries, a combination of factors making a bridge out of the question. Here there are five different schemes, comprising some 6,000 houses. Some of the best architects, including Dr. Berlage and Mr. Gratama, have been employed, and very comfortable flats, renting at from 7s. 6d. to 8s. 6d. a week, have been provided. One noticeable contrast with English schemes is the lavish colour schemes, which serve greatly to brighten both interior and exterior, and the kitchen fittings, which remind one of dreams of the Tudor Walters and Women's Advisory Committees of the Ministry of Health. Both electric light and gas are fitted. The houses are well looked after and the tenants seem to realise their duties.

Although the scarcity of good sites precludes large gardens, small gardens are provided, together with good playing grounds. Another heavy additional cost may be mentioned here. All roads have to be built, and the surface must be of solid bricks, and to add to that the municipality insists upon a huge granite kerb, every ounce of which must be imported, and will not accept any substitute. No wonder that one site I saw, which cost less than five florins a metre for the land, had cost forty to fifty before houses were began!

Oostzaan, on the extreme north, is the simplest of all the schemes, and at the same time one of the most interesting because of the difficulties which have been surmounted there. Formerly a wilderness of coarse grass and reeds, some five or six kilometres from the city, it has been converted, since September, 1920, into a suburb of considerable dimensions, and of the total a thousand houses will be occupied before June. The lay-out is not superficially attractive owing to its rigid formality, but by careful attention to view points, to the provision of archways in the main blocks, giving vistas of succeeding gables, by the careful framing of street pictures, and blocking in the ends with public buildings, and particularly by generous schemes of planting, the wilderness has become a garden. The houses are reckoned as semi-permanent, and are built upon 8 by 4 story posts, with roof timbers of the slightest. The cavity walls consist of a half-brick external leaf (the thin Dutch brick) and a brick-on-edge inner leaf.

Houses in Effenstraat Mr. La Croix, Architect.

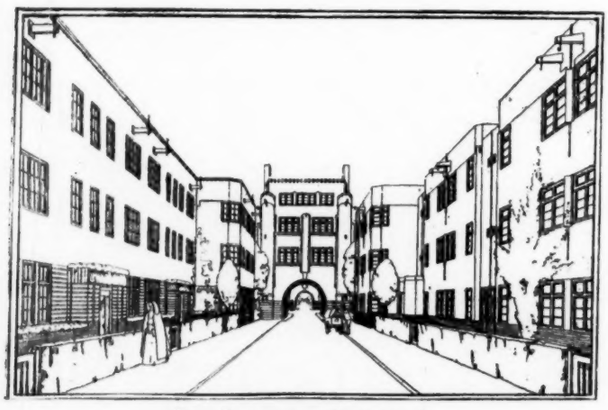
Street names seem to have had a good deal of attention everywhere; here they are after the constellations and other heavenly bodies. At the first-mentioned site they were all after birds, and at yet another flowers were the example.

It should be remembered that gas, electric light, and water have all to be brought from the city. The site is flanked by one of the new broad highways which are being projected in place of the narrow tortuous ways which divide from rather than connect Amsterdam with the towns to its north. New docks have been built in the neighbourhood and new workers will find their homes here. There are two main types of house—one with mansard roof giving two bedrooms, and the other with a pitched roof giving a small additional bedroom. The cost in 1921 was about £400 each. The rents are 10s. a week. Other houses are built from the clinker from the refuse destructor, in blocks made with a Winget machine, and there is also a German form of concrete construction which is being experimented with. In various parts may be seen some familiar steel casements.

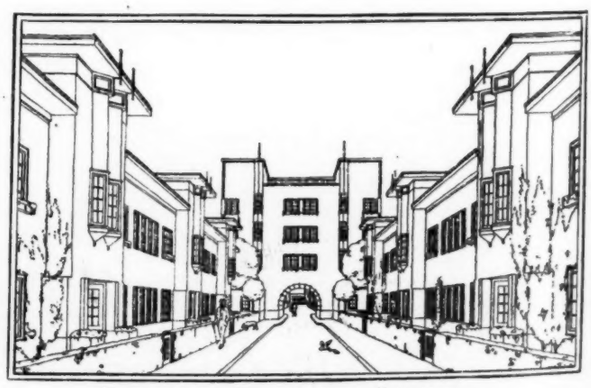
Buiksloterham, "V" on the plan, consists of 1,500 houses built during the war by the municipality, and already presents a solid, settled-down appearance.

Among the most fascinating of the schemes is that at the Transvaal, where the street names have mixed memories for many of us —Kruger, de Wet, Botha, Smuts, Majuba, and so on are represented. Here the site flanks another of the new big main roads, and consequently is very expensive. Facing the road, therefore, are tall tenements of five stories, forming a noble framing to the road. The work has been done by Jan Gratama, and the photographs give some idea of its dignity. Behind the front blocks are erected one-family cottages, all with very distinctive characteristics and bristling with points which could be mentioned if this were an encyclopædia and not a newspaper article. Mention should be made of the means of access to the rear of the various blocks, which is illustrated. Besides other communal advantages, Mr. Keppler has provided in connection with the scheme special houses for the reception of tuberculous patients and for motherless families.

The south-western extension scheme has six public utility societies at work providing 1,000 houses, and several of them are employing the Building Guild as their contractors. Here imagination has run riot. This, with the work of de Klerk, will surely remain for generations as a token of what can be done to break with tradition in architecture. One group by Mr. Piet Kramer is not only bold in the breadth of its treatment, its gorgeous colourings, its wonderful brickwork, and so on, but the house has a very pronounced batter, giving the appearance in the distance of a truncated pyramid. The



The Stadium "Complex."



Perspective View on the Stadium.

main building has a flat roof and the upper story is tile hung. Flanking the entrances are the circular stairways, wonderfully built in multi-coloured bricks of all makes and sizes. The ceiling of the entrances is somewhat of a shock, consisting as it does of brick hung from the concrete! On the other side a series of balconies gives a great impression of width, and this is rather emphasised by the construction being of brick on edge. And such bricks! Quite small in size, odd as to shape, and green, blue, yellow, red, purple, grey, and almost black.

The noblest of all the conceptions is that at the Stadium site, which is part of the new southern town extension, for which the town plan was prepared by Dr. Berlage. As will be seen from the illustrations, an enormous access of population is provided for, and on the Stadium site a committee of six architects has been at work to ensure the best results. Instead of each architect doing one portion by himself, the whole six have been engaged on the whole problem, under the direction of Mr. Jan Gratama, with a result which is as remarkable as it is successful. The reproductions of the perspectives give an idea of what will be done. But the palm for eccentricity and bizarre effects goes easily to Mr. de Klerk's municipal houses to the west of the central station. It is difficult to express in words what is really the effect of a scheme like this upon one who has been trying for the past weary months to live down to the standard of housing imposed by our own Ministry of Health. Mr. de Klerk has succeeded in getting translated into brick and mortar, and incidentally a few sections into woodwork, some of the weirdest conceptions that ever came from a drawing office. Only an artist could have produced such plans; only a genius could get them built: only a Sala or a Poe could describe them. Let the pictures speak for themselves!

The social side has by no means been neglected, and Mr. Keppler has been keen to press into service the various organisations existing for social welfare. Besides the ordinary school accommodation, there is a medical service, a fire service, baths and wash-houses, and a "settlement" organised after the manner of Toynbee Hall. This is doing excellent work, and is much appreciated. Some rather daring innovations have been made by the Housing Department. For the safety of the district, where still a number of temporary wooden dwellings may be in existence, a well-equipped fire station is erected, but besides the accommodation for engine, escape, hose, etc., and the sleeping and messing-rooms for the men, there is at the rear a well-equipped wood-working shed, with electrically-driven machines, and in here the firemen utilise their time when there are no fires—and they are practically non-existent—in making joinery and furniture. One fire-station I visited specialised in wooden bedsteads. It appears that many couples who have been living in furnished apartments find themselves unable to equip their new homes properly, and they are then provided with various articles of furniture, which they pay for in weekly instalments.

The bath-house provides shower and slipper baths, the former being the most popular. The price is 10 and 12½ cents respectively, equal to 2d. and 2½d., including towel and soap. Hot water is supplied at the rate of ten litres for three cents, and this is available on three mornings of the week.

The Housing Department appointed women managers to take charge of the municipal houses and their tenants on the same line. Mr. Keppler has now a staff of thirteen women managers working under the Chief Woman Manager, Mevrouw Merrouid Wegerif. On the schemes owned by the municipality, with a weekly collection 17,000 florins, the total arrears amount to only 4,000 florins. These women officers do their work in a splendid way, and its effect is apparent in the way in which the houses are kept up.

The financial side is not neglected, and the financial officers of the Housing Department have much to do to control the financial affairs of the public utility societies and to administer the schemes belonging to the municipality.

The subsidy houses are naturally the concern of the State and not of the municipality. For private individuals, whose houses are within the prescribed limits, the maximum grant is 900 florins.

PROPAGANDA.

My friend Archie is an architect. He has been very interested lately in the campaign "to stimulate public interest in architecture." The other evening I called round to see him, and found him more depressed than usual. I gathered that the public was quite hopeless and indifferent to art of any kind.

"You see these two articles," he said, handing me some cuttings from a provincial evening paper, "well, I wrote them a month ago, and no one has been decent enough to follow up the idea."

A quick glance showed me that the articles were comprised of the usual stuff about the abysmal ignorance of the public on anything in connection with the art of building, but Archie seemed to be at his best when dealing with his grievance that the public was not even interested in the names of architects. I noticed that he had gone out of his way to mention that one of his friends was the architect for a cinema, and another for a warehouse in the city. He fairly ridiculed a public which did not know these names.

"But why did you mention their names, old chap. Surely that is hardly playing the game?" I remarked.

"Oh, I know what you mean," said Archie, "you mean that architects are not supposed to advertise."

"I wasn't thinking so much about the advertising, though . . . ."

"Well, it is putting it a little crudely perhaps, but you know we are allowed to put a wee inconspicuous plate on a building. . . . ."

"Besides, Archie, you can always put up a notice-board to say that particulars of the offices can be had from the architect."

"Well, what were you thinking about, anyway?" said Archie. "Surely you believe that the proper study of architecture is the architect."

"Certainly I agree that the public ought to know about your pals, but it seems rather a shabby trick to give them away."

"Now, look here," said Archie, rather heatedly I thought, "what do you know about these buildings? If I told you that they were really fine you wouldn't care, because you wouldn't understand."

"I know more about them than you think. I happen to have to spend a bit of my working-day in one of them, and, suppose I found out that you had been the architect, it would be no advertisement for you."

"Exactly. You are thinking about your beastly office and smoky fireplace; and I am thinking of Thomas, who is a very decent fellow, and may never get another job unless the public knows where to go when it wants another fine building."

"Don't be silly, Archie," I replied. "If you had been thinking of Thomas you would have kept it dark that he had anything to do with the building. Besides, where does the education of the public come in?"

"I have already told you that the first thing is to get the public interested in the architects, and the rest will follow."

"Follow what? Thomas?"

"No, you silly ass. An appreciation of architecture will follow."

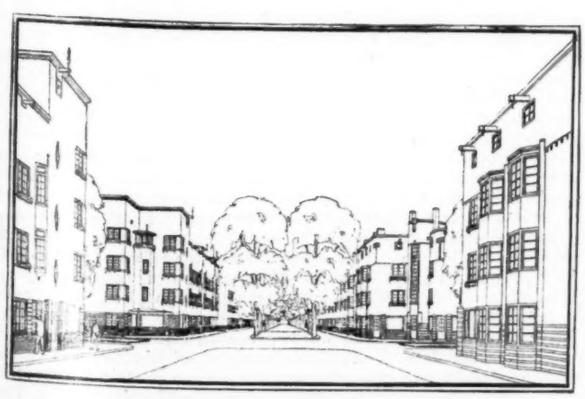
"You are quite right, Archie, but not the way you think. I'm hanged if I can see that there is going to be a rush to get buildings signed by Thomas."

"All right, have it your own way; but I think the least that Thomas could have done was to have reciprocated and published the fact that I was the architect for that little bank at the corner of Piccadilly."

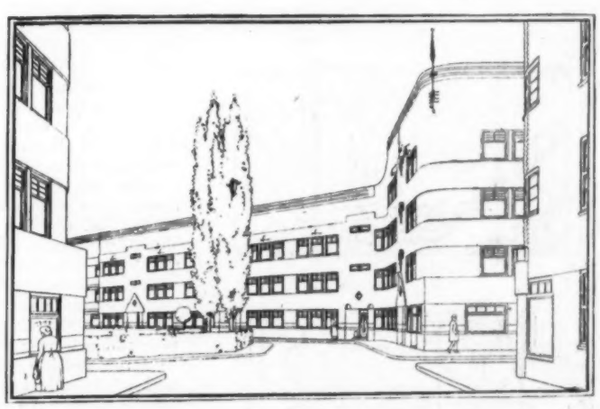
"Oh, heavens, Archie; that explains everything. Can't you see that your friends are true pals not to have let you down?"

I dodged a bottle of ink as I made for the door, but before I got out I managed to tell him that I would write an article about architecture and mention his building, but I would be careful, and mention the wrong architect.

H.



Perspective on the Stadium Site, Amsterdam.



Perspective on the Stadium Site, Amsterdam.

X

HISTORICAL BUILDING CONSTRUCTION.—XI.

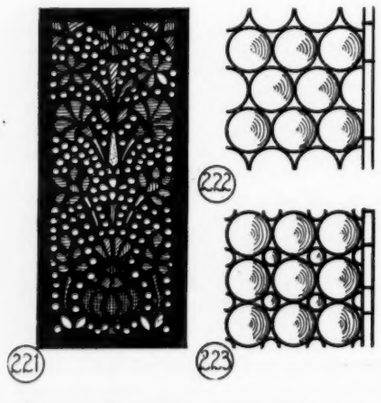
BY MARTIN S. BRIGGS.

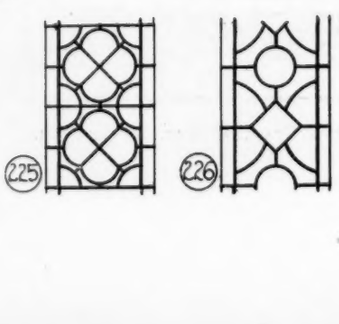
GLAZING.

Glazing is an accessory rather than a primary necessity in a warm climate; hence we do not find the beginnings of its history in Egypt or Assyria, as we have done in the case of most of the crafts previously dealt with in these articles. The so-called "windows" in the clerestory of the Hypostyle Hall at Karnak, like the charming example from Denderah in the British Museum, were really great stone grilles to admit light in small patches, and were unglazed. Yet the art of glass-making, though not applied to windows, was practised there in the Roman period, and may have come to Egypt from China, where it is said to have been known as early as 2300 B.C.

Nor does it appear certain that the Greeks ever used glass windows; certainly not in their temples, and their houses were generally of a lower standard of architectural finish. The window-openings in the Erechtheum may seem to provide an exception, but they are of Roman date. The method of lighting the temples, whether by clerestory or otherwise, has never been determined, but in Article VIII of this series the transparent marble tiling and the openings in the roof were mentioned.

In the colder climate of Rome glazed windows were largely used in later days, when ideas of comfort and even of luxury had considerably advanced. At the beginning of the first century A.D. glass made its appearance in windows By this time glaziers were sufficiently numerous to have a street allotted to them. Vitruvius gives a simple (and rather obvious) rule for testing the amount of light necessary in a room whose windows are obstructed by other buildings, but says nothing of glass. Caligula glazed the windows of his palace in 37–41 A.D. The numerous remains of glass still existing from the later centuries of the Empire, in Pompeii especially, but also in all parts of Western Europe, including Gaul and Britain, enable us to form a few conclusions as to its nature and use. It appears to have been cast in small sheets, to have been fairly clear, of a greenish tint, and from $\frac{1}{8}$ in. to $\frac{3}{8}$ in. thick (the latter thickness having been found in a window 2 ft. 8 in. by 3 ft. 8 in. glazed in one sheet without bars). As a rule window-panes were about 12 in. high, and were often square. The glass was cemented, or fixed with nuts and screws, into frames made of wood, bronze, copper, or even lead. Obscured or ground glass has been discovered. There is a bow-window looking on to the garden in one of the villas at Pompeii. Besides these familiar types, pierced stone screens in openings were sometimes glazed. Professor Lethaby writes that there were glass-works in London and Silchester, but is of opinion that the "metal" was imported.





During the Dark Ages the progress of glazing in Western Europe was naturally slow. Glass windows were being made in France during the sixth century, and it was to France that Benedict Biscop sent for glass-workers in 675, when he wished to glaze the windows of his church and monastery at Wearmouth. "They came," says Bede, "and not only did the work required of them, but taught the English how to do it for themselves." In the same century the windows of the old minster at York, which had formerly been lit through pierced linen or perforated boards, were filled with glass. At Peterborough, even as late as 1190, 40 windows in the nave of the cathedral had to wait 20 years for their glazing, being filled meanwhile with reeds and straw to keep out the rain. Glass was only used in the larger or richer churches, while for domestic buildings it was apparently never employed, Even in the halls of the great feudal castles the wind whistled through unglazed window-openings on winter days, and even if wooden shutters were used at night, as described below, they would hardly be possible in the daytime.

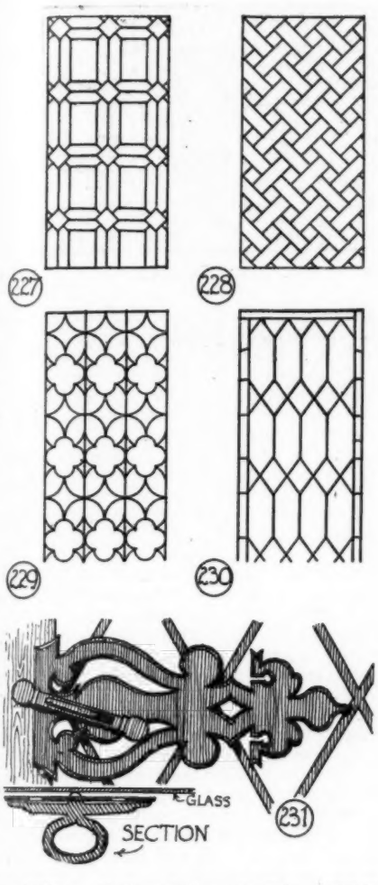
It may have been the scarcity and expense of glass that accounted for the very small size of the windows in Anglo-Saxon and early Norman churches. Moreover, a wide window was more difficult to glaze than a narrow one under the prevailing conditions of manufacture. Either explanation is more plausible than that of an Italian writer who suggests that a "dim religious light" was intentionally aimed at, a typical modern idea of architectural design that could never have entered the brain of a practical man like the mediæval builder. A third possible reason for small windows, seeing that such windows were usually placed high up in the wall, was that the church was, in those early days, still a place of refuge on occasion. The normal and almost universal Romanesque window in all countries, as in the Roman and Byzantine periods, had a semi-circular head. The glass was placed close to the face of the wall, with a wide internal splay to admit light. As the width of the opening was increased after the Norman Conquest, it became necessary to support the glass against wind-pressure by horizontal iron saddle-bars let into the masonry at each end and by vertical iron stanchions. Where glass was not used, as in many small churches, and probably all domestic buildings, the ordinary method of closing an opening was by means of wooden shutters, sometimes pierced with a round hole, hung on iron hooks, and opening either inwards or outwards. The Anglo-Saxon word for window means literally "eye-hole," and evidently little more than an eye-hole was expected. But in some Anglo-Saxon churches one finds thin slabs of stone pierced with ornamental patterns, closely resembling those used in the Byzantine Empire, in Syria, and in Coptic Egypt at the same date, and afterwards so characteristic of Saracenic architecture. We know that Greek glaziers were brought to France in the seventh century, and at this point we must consider the influence of the East on the craft, for, as Mr. Lewis Day has written:—"Coloured glass comes to us from the East; that much it is safe to conclude."

The earliest use of stained and painted glass in Western Europe may possibly date back to the time of Charlemagne, *i.e.*, about 800 A.D. But long before this date it was probably employed at Constantinople, and thence it passed westwards through the Byzantine cities of Ravenna and Venice to Limoges in France, where a colony of Venetian glass-workers settled in 979. Very little is known about this Byzantine glass, and Sir Thomas Jackson considers that it was seldom used in churches where the walls and vaults were decorated with mosaics, as there would then be too generous a provision of colour, and full justice could not be done to the mosaics, which after all were the chief element in Byzantine architectural decoration. But the nature of this early glass closely resembles that of contemporary mosaic and enamel, and may best be understood by a reference to the much later but probably identical work of the late Saracenic period in Cairo, Jerusalem, Damascus, and other Muhammadan cities.

Fig. 221 illustrates one of these "pierced lattices," and is typical of most others. It consists of small pieces of coloured glass let into a panel of plaster. The various perforations are splayed or bevelled on the inside, the angle being varied according to the height of the window, so that the light is not obstructed. The plate of plaster is sometimes not more than $\frac{1}{2}$ in. thick, is strengthened by iron bars or of ribs of cane if of large size, and is often fixed in a wooden frame. The glass is often of poor quality, but appears to great advantage against strong light because of its opaque setting, the area of the solids usually exceeding that of the voids, and the size of the small perforations often not exceeding an inch. The effect has frequently been compared to "jewels of light," and when one reads of "jewels" in the "Arabian Nights" and other Eastern fables, coloured glass is generally implied, not precious stones.

It was these "mosaic" or "jewel" windows that inspired the first stained glass of the Romanesque craftsmen. Very few examples earlier than the thirteenth century remain, and those mostly in France, but the Western windows were set in wide "cames" of lead. The glass was of deep strong colours, hardly any white being used, and gained immensely in effect through the amount of opaque lead that was employed. Viollet-le-Duc mentions an example of "faked" lead glazing of early date (in appearance not unlike the central panel of the example from Aix-la-Chapelle illustrated in Fig. 224), where some of the lead bars were not cames but merely applied strips. This, however, is unusual, and early glazing was generally noteworthy for the strength and sincerity of its leading. In Byzantine architecture "roundel" glazing is also common (of the type illustrated in Figs. 222-3, though those are taken from much later examples).

In the thirteenth century in England the windows of castles were first glazed, but for a long time this was most unusual, and a nobleman travelling from one house to another often carried his glazed casements with their wooden frames among his personal luggage. Oiled canvas was used in the windows of the Chapter House at Westminster in 1253, and wooden shutters were far more common than glass. In the Hall of Stokesay Castle (*c.* 1240-1290) is a tall two-light window of which the upper part (above the transom) was glazed and the lower part furnished with wooden shutters. Below the window are two stone window-seats. In churches the width of windows was increased, partly because the use of stained glass reduced the amount of light. The glass continued to be placed near the outside of the wall but now a dripstone was invented to protect it. The use of vertical iron bars, which at first had divided the design into rectangles, was now varied by



the addition of "medallions" (Figs. 225-6), which soon became a characteristic feature of the period. The glass itself was thick and uneven. It was "pot-metal," that is to say, the colour was burnt into it, and painting on the surface was hardly used in those early days except to touch up features, etc. The use of the diamond was unknown, and at this date glass was laboriously cut by passing the point of a red-hot iron over the surface. Hence simple shapes were aimed at in design. The glaziers seem to have been few in number and to have worked in small groups. They drew out their designs on a whitened bench, on which the glass was afterwards put together, and thus the design would be destroyed unless copies were made on sheets of parchment and preserved, as was probably the case. The thirteenth century also saw the introduction of *grisaille* glass (in light tints), and probably the foundation of the famous works at Murano near Venice.

Nothing is more remarkable in English architecture of the fourteenth century than the great importance given to stained glass. At Gloucester especially, every effort was made to reduce masonry to a minimum in order to provide an uninterrupted expanse of "storied windows." With the same object in view, flowing tracery gave place to a rectilinear treatment, for, just as—according to Ruskin—stained glass "spoils all traceries," because it dims the silhouette, so tracery, in a way, hinders the design of glass though it supports it against the pressure of the wind. Windows were now set further back in the wall to protect the painted glazing. Massive rebated bars of iron, known as framing bars, were fixed horizontally in the stonework every 3 or 4 ft. in the height of the larger windows, and light saddle-bars were fixed between these and *inside* the glass. To these the glazing was attached by means of strips of lead (called "bands") soldered to the leading of the glass, and twisted round the bars. (Nowadays copper-wire is used for the purpose.) The craze for stained glass, as Bond says, "spread like wildfire through the length and breadth of England," and the process of manufacture was greatly improved. Instead of being thick and opaque, as in the previous century, it became thin and translucent, the mass of deep colour being reduced to a minimum. The white—(strictly speaking, greenish)—glass of the background was divided into diamond-shaped "quarries," this form having been probably suggested by the light "lattices" of interlacing twigs that preceded glazing in the windows of earlier cottages. The introduction of "stippling" and of "yellow stain"—technicalities that cannot be described here—also greatly influenced stained-glass design of the period. Window-glass was one of the commodities obtained largely from the Flemings in exchange for English wool, and was imported also from Venice, Normandy, and the Vosges. In domestic buildings shutters continued to be used, as well as both wooden and iron casements, and it is interesting to read that the wages of a glazier were 3s. a week, while a master-glazier earned 3s. 4d.

The fifteenth century witnessed a further development in stained-glass manufacture, chiefly due to the prosperity in the wool-trade which accounted for so many fine churches in the West and in East Anglia. For a time English craftsmen surpassed the Continental glaziers in the beauty and skill of their work. The glass itself was thinner, flatter, and of a more even colour. The invention of *verre doublé* extended the range of the artist's palette. But the main change took place in the arrangement of the leading, which now became subservient to the "picture," instead of defining and limiting the whole design. Mr. Lewis Day points out that up to this period the design of a window may be inferred from the leading *externally*, but that now this excellent treatment was discarded. The pieces of glass became much larger, and the idea of "mosaic" was lost. Painting with the brush became more and more general.

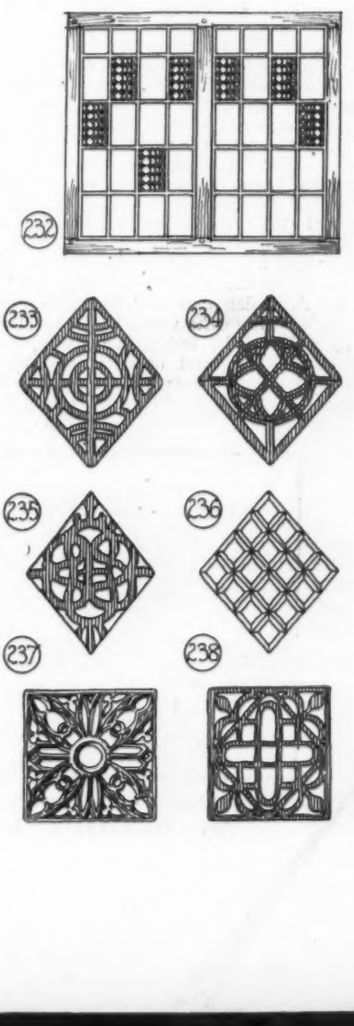
In domestic work glazing had not yet become universal, and sheets of horn were used sometimes to keep out the wind. But windows were often fitted with seats, they served as "leaning-places" for conversation, and in the halls of the larger houses the great bay-window by the dais became a notable feature. On the Continent the fourteenth century saw the introduction of "roundel" glazing as a background, as illustrated in Figs. 222-3.

During the earlier part of the sixteenth century the bay-window continued to develop, but glass windows were by no means universal and were still regarded in the eyes of the law as "movable furniture." A certain amount of glass continued to be imported from the Continent, and there was close intercourse with the Flemish school of glass-painters. In this craft may be noticed signs of decadence and a departure from English tradition towards mere picture-painting. It is probable that the use of the diamond was not introduced till the following century. Among means of cutting employed, in addition to that already described, may be mentioned a pair of shears under water, or a piece of red-hot charcoal.

The dissolution of the Monasteries and the Puritan movements that followed resulted in the destruction of much of the existing stained glass in churches, and, except for a brief revival under Laud, the art was now chiefly restricted to windows in colleges and large houses. But the invention of "enamel paint" changed its character. From about 1550 onwards, this medium came into general use, completely superseding the earlier and richly-coloured "pot-metal." Colour as used in the Elizabethan and Jacobean periods was restricted to brown and yellow medallions painted on a white background divided into geometrical patterns by leading, and to occasional escutcheons with full heraldic colouring. In these medallions leadwork ceased to play any organic part; indeed, it was avoided as far as possible. A layer of white enamel paint on the back of the window produced a somewhat opaque effect.

But the development of window-design was remarkable. The bay-window was now carried up several stories and became the most striking feature of the Elizabethan façade, while smaller mullioned windows were freely used. Glass-works were opened in several places and a thriving English industry grew up. In 1616 coal was first used in manufacturing glass, wood having been previously employed. The plain glass of this period varied greatly in tint. It was set in lead cames, about ⅜in. to ½ in. wide arranged in diagonal or lattice patterns at first but in rectangular panes from about the middle of the seventeenth century. But ornamental patterns were also used (Figs. 227-230), especially in the larger houses. For cottages they were not so much favoured, as they presented difficulties for the village craftsman. In 1615 was published a book of designs by one Walter Gedde, entitled, "A Booke of Sundry Draughtes. Principally serving for Glasiers, and not Impertinent for Plasterers and Gardiners: besides sundry other Professions . . ." This book contains 103 pages of designs which are intended for windows, but are also applicable to ribbed plaster ceilings or to the *parterres* of a formal garden. All over England are delightful examples of the glazier's art in the sixteenth and seventeenth centuries. They include many examples of ornamental casement-fasteners (Fig. 231) and stays, and a certain number of lead ventilating-quarries (Figs. 233-8), of which Fig. 232 shows the application.

Lead glazing persisted up to the end of the seventeenth century, though the sash-window was introduced much earlier and is found in Inigo Jones' houses—Raynham (1630-6) and Coleshill (1650)—as well as in John Webb's houses in Great Queen-street (1640). At first only the lower part of the sash was movable, being kept up by a series of notches and a catch to hook into them. Late in the century, and probably introduced from Holland, was invented the modern method with weights, pulleys and lines. The wooden bars of these windows were very stout, and not mitred, but constructed with a mason's joint. For some time, sash-frames were set back at most 2 in. from the wall face and sometimes even flush, but an Act of 1709 (only recently repealed) insisted that in London they must be set back at least 4½ in., as a precaution against fire spreading from room to room. Of the few examples of painted glass of this period (including the windows at New College, Oxford, where



the Virtues designed by Sir Joshua Reynolds peer at the spectator through the heavy metal bars that he ignored in his design), the less said the better. The art was as dead as a door-nail.

The eighteenth century saw little change in glazing, the only features being the progressive attenuation of the sash-bar, and the revival, a century or more ago, of decorative glazing in fanlights, &c. The shallow segmental bay-windows characteristic of late Georgian houses are, however, very attractive. But glazing, like the other crafts, shows a story of development and decline, losing its vitality as copy-book revivalism took the place of traditional work by practical and simple-minded men.

[The illustrations accompanying this article are all specially drawn, but Figs. 221-226 and 232 are from Lewis F. Day's "Windows"; Figs. 227-231 from Garner and Stratton's "Tudor Architecture"; andFigs. 233-238 from Weaver's "English Leadwork."]

ARMENIAN ARCHITECTURE.

THE opening and private view of the exhibition of Armenian architecture, which is being held at 9, Conduit-street, W.1, under the auspices of the Royal Institute of British Architects, took place on Wednesday last. Mr. H. D. Searles-Wood presided.

Prof. W. R. Lethaby said Mr. A. Fetvadjian, the artist who made the beautiful and very accurate drawings of Armenian architecture now exhibited, showed them about a year ago in Paris. A few months since some of them were again on exhibition at South Kensington Museum, on which occasion he (the speaker) had the pleasure of meeting the artist. In giving some personal particulars of Mr. Fetvadjian, the speaker said he showed an interest in drawing from infancy, and his family decided he should be a painter. His first serious education in art was at an *Ecole des Beaux Arts* at Constantinople, under Italian, French, and other masters. Here in his fifth year of study he obtained a *Prix de Rome* in 1887. He then worked for four years in Rome at the Academy of St. Luke, especially under Professor Cesare Maccari. He visited Tiflis, now a large Russian city, and the modern intellectual centre of the Armenian people. From Tiflis he, in 1900, made an excursion into the interior of what he calls "the classic land of my ancestors." From 1900 he settled at Tiflis for the purpose of pursuing his "patriotic work." Mr. Fetvadjian had systematically studied the architecture of his country, mostly ruined churches, for twenty years making his large collection of drawings with the hope of publishing an historical account of it. He said of some written notes, prepared for publication in the Institute *Journal*, that they are abridged from the chapters of a book which he had hoped to consecrate to the arts "loved and cultivated by my Armenian ancestors." Mr. Fetvadjian had suffered from the war and the revolutions which followed it, losing his house, studio paintings, books, and other possessions.

He was however, known and esteemed by all Armenians, and admired by the Western artists who had seen his marvellously accurate water-colour drawings, and, in any case, he had accomplished a great piece of work.

The great period of architecture in Armenia was from the sixth to the thirteenth centuries, and most of the monuments illustrated by the drawings on the walls were works of that epoch. He (Professor Lethaby) had been greatly interested in reading the artist's notes on Armenian art, by his enthusiasm, not merely for his ancient country, but for its culture. His enthusiasm was characteristic of his people. Again and again he wrote of their passionate interest in architecture. The Armenians, he said, were "a people who, by their proper nature, loved work and sought culture. They had a zest for architecture." Fine and eloquent phrases, they might think, but perhaps not much more than that; yet it might teach them something to find a worker and a thinker from a distant land using such language. Another recurring thought which was frequently expressed was that Armenian artists were not subject to megalomania. "Their æsthetic sense was content within the limits of humble proportions." Again, "each building master was a creator, not a copyist, varying ever in his work by the force of true originality and harmonising art with convenience and reality." He (Professor Lethaby) had found it very interesting in looking over his notes to find how men, who thought at all, had to consider much the same problems. For instance, in his remarks on particular churches he found two or three times the words "restored and spoilt." That was a sort of thing they were accustomed to in this country. Examination of the delightful drawings hung on the walls and of the plans and diagrams given in Strzygowski's volumes will show the many ingenious adaptations and inventions made by Armenian builders. Referring to one drawing, Professor Lethaby said it was like looking through a reducing glass at the true thing. He had never seen more subtle accuracy, truth, kindliness and beauty. He thought they were amazing drawings.

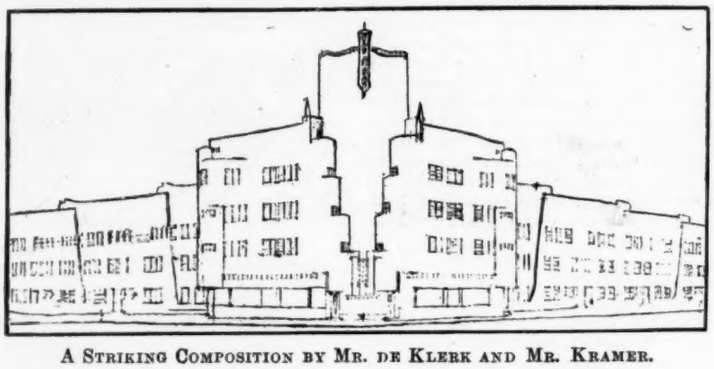
Armenia was a country covered with ruins. Many of them were ruins from old time, but their number was always increasing. He had asked Mr. Fetvadjian about the present state of his wonderful country. His answer was, "Sad, sad, weepingly sad." There was in the R.I.B.A. Library a collection of drawings by Texier, some of which, were of Armenian subjects. At the library of the Royal Geological Society was a collection of old photographs made in this country ,and a few years ago some fine photographs of Armenian churches were published in one of the illustrated papers. In a last word he (Professor Lethaby) would like to recommend students to study these very interesting records of a true form of architecture existing and developing free from the superstitions they cultivated in the modern professional world.

Mr. Fetvadjian, who was introduced by the chairman, speaking in French, said he had never claimed to be an archæologist or an architect, but had been led to carry out his work from feelings of patriotism.

In a foreword to the catalogue of the collection at the Museum, Professor Lethaby says that in the first expansion of Christianity, Armenian architecture flowed out to the East and South as well as to the North and West. Armenia early received and adopted the new teaching and way of life; and it is the most oriental country which has remained constantly and consistently Christian. The land is covered with remarkable churches and monasteries now for the most part sadly ruined. Mr. A. Fetvadjian has spent more than twenty years in making elaborate drawings of the churches and their details. These drawings are admirably executed, and models of accuracy. They are records of important documents of world history and pictures of delightful works of art. Among the characteristics of the architecture a remarkable ingenuity of planning may be mentioned, especially the working out of round and cruciform types.

[The Exhibition is referred to on page 591].

PUBLIC UTILITY SOCIETY HOUSE, AMSTERDAM, BY MR. PIET KRAMER (*See p.* 594.)



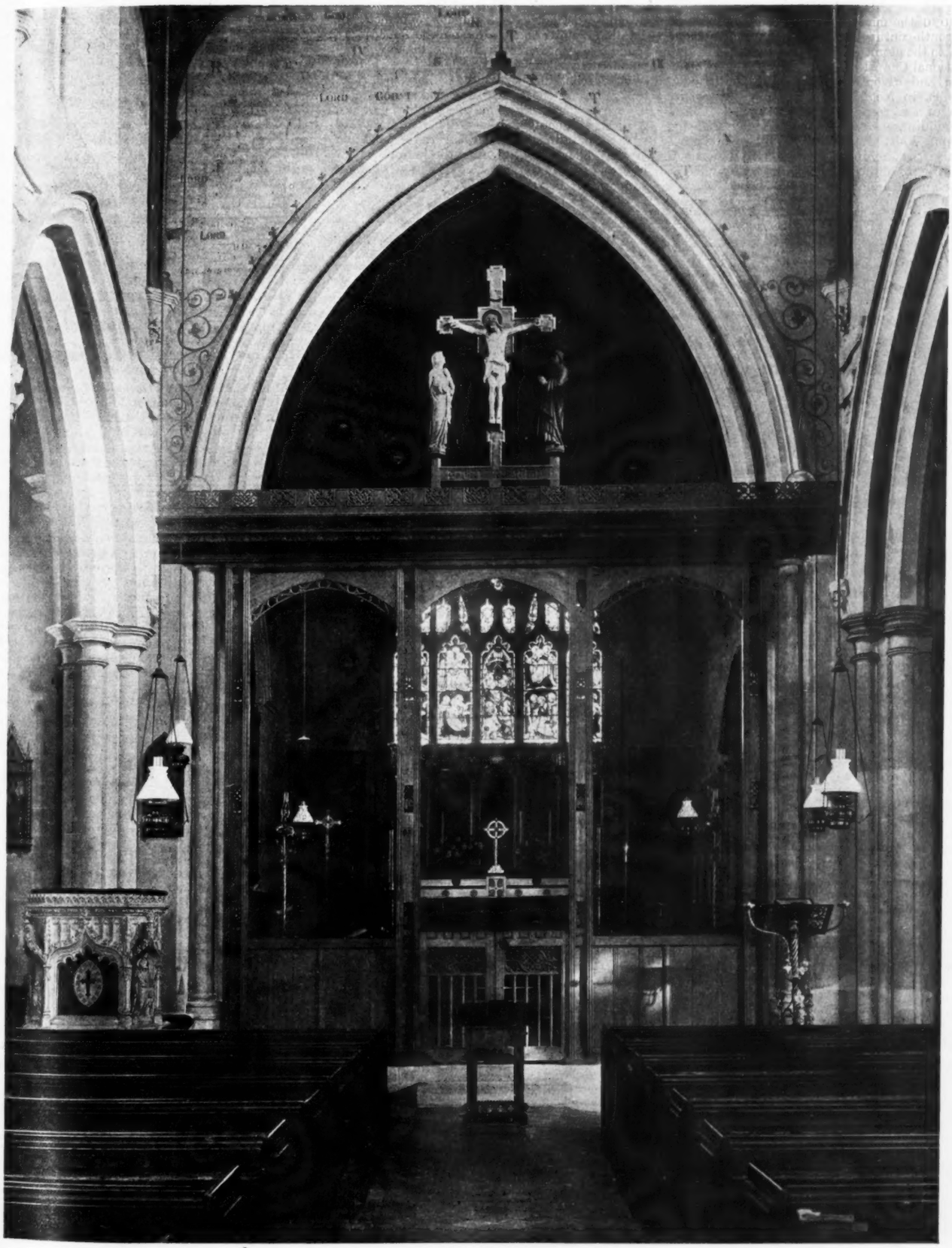
A STRIKING COMPOSITION BY MR. DE KLERK AND MR. KRAMER.
THE "DEDAGERAAD" SCHEME AT AMSTERDAM. (*See p.* 594.)

ROOD SCREEN AT FRAMPTON COTTERELL CHURCH, BRISTOL.

THIS church is a modern one (taking the place of a mediæval church of which the tower alone remains), and the proportions and detail are fairly good, probably dictated by the old remains, but the fittings are of the worst "church upholstery" type, one or two examples of which may be discerned in the photograph.

The memorial rood screen illustrated on p. 601 has been designed by Mr. Gerald Cogswell, A.R.I.B.A., of 2, Bedford-square, W.C., who writes: "The design of the screen is an attempt to initiate a better tradition; simple in outline, with ornament only placed when it is required to give emphasis; severely plain, with the exception of the cornice, which, starting with a ribbed cove and pendant running ornament based on Traveller's Joy,' and moulding with carved winged cherubs' heads in the hollow, terminates with an elaborate cresting of openwork carved panels alternating with plain, the carved design being based on the English rose, oak and vine, above which rises the rood with coloured and gilded figures. The upper part of the gates, otherwise framed-up with simple balusters set angleways, contains openwork carved panels of tracery and the cross-keys of St. Peter, to whom the church is dedicated. The effect has been to give to the church a devotional aspec which before it conspicuously lacked."

The screen is nearly a square, being about 18 ft. wide and the same in height to the cornice, exclusive of cresting, and has been carried out by Mr. Herbert Read, of St. Sidwell's Art Works, Exeter, from the design and full-size cartoons of the architect.



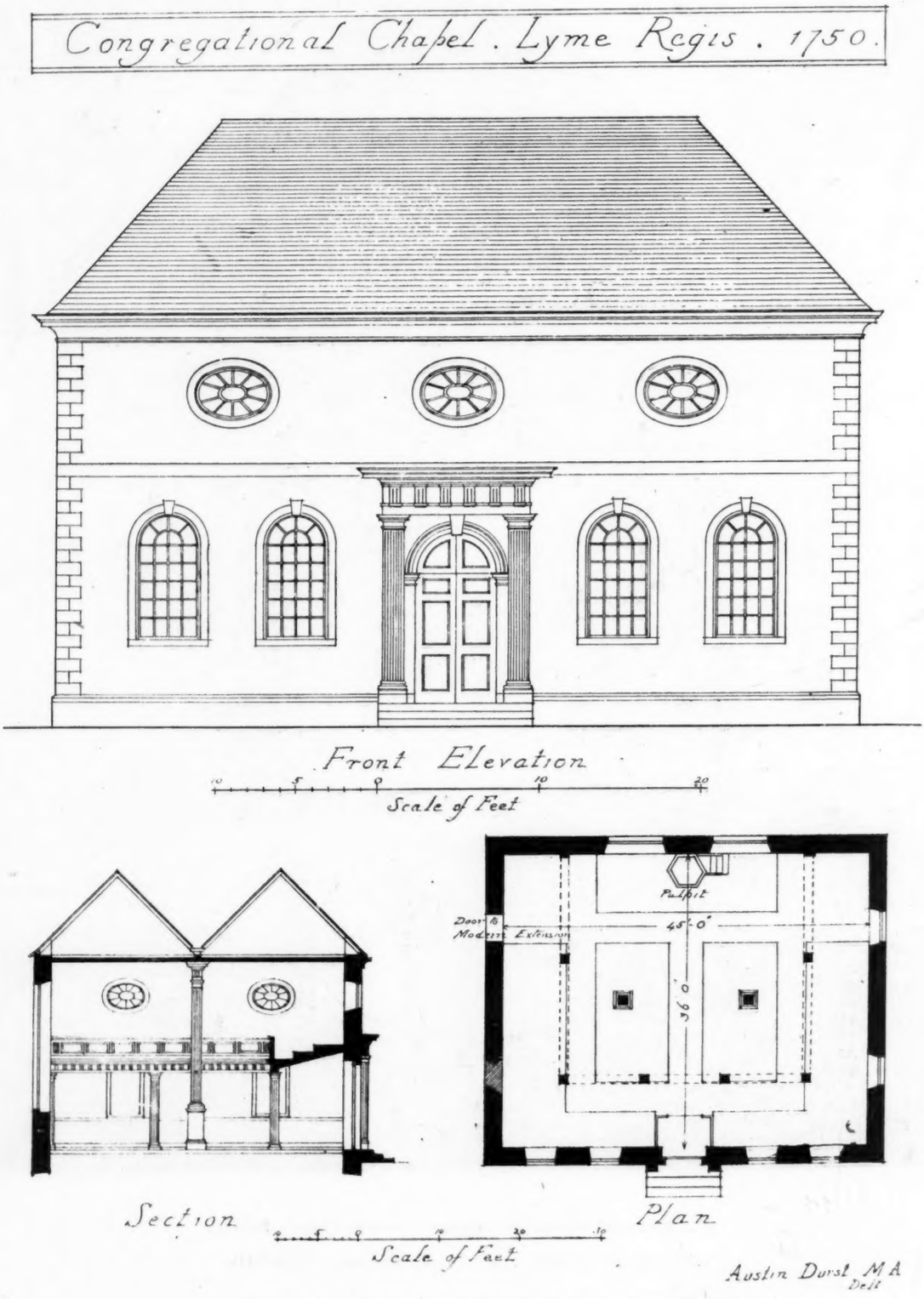
War Memorial Screen at Frampton Cotterell Church, Bristol.

Mr. Gerald Cogswell, A.R.I.B.A., Architect. (*See p.* 600).

THE CONGREGATIONAL CHAPEL, LYME REGIS.

Among the many characteristic examples of eighteenth-century architecture, which add so much to the attractions of Lyme Regis, the Congregational Chapel bears witness to the skill in design and execution of the local craftsmen. There is, in fact, a strong family likeness in much of the work of this date in the town. The building of this chapel was undertaken by one John Whitty, who was not only the minister, but also the architect, foreman and joiner for the work, as the chapel records testify. They also tell us that the scheme for a new chapel was started in 1746, and the whole was completed by 1755. Whitty executed the pulpit and gallery fronts. The whole of the woodwork is carefully designed with much refinement of detail. Unfortunately, the pulpit has lost its sounding board and elaborate canopy surmounted by a carved urn, which were in 1919 lying derelict in the disused gallery. Part of this gallery in the N.E. corner and the staircase have been cut away to make room for an organ. A clock with octagonal brass dial, contemporary with the building, forms a feature in the panelling of the gallery front, facing the pulpit. It is interesting to note that one of the main columns supporting the roof is said to contain as a core one of the masts of the *Mayflower*, of Pilgrim Fathers' fame. Externally, the rubble walls are plastered and finished with a rough face. The coved cornice is plastered. The roof is laid with a thick grey slate in diminishing courses. It is to be hoped that the authorities in whose care the building now rests will preserve the original features of the design, so that it may always remain an ornament to the town and a memorial of the founder, John Whitty, and still, in the words of the church records of his date, "Be allowed by all to do honour to his taste."

Our illustration is from a measured drawing by Mr. Austin Durst, M.A., F.R.I.B.A.



Measured and drawn by Mr. Austin Durst, M.A., F.R.I.B.A.

LEADING CONTENTS.

	PAGE
"FRILLS" IN HOUSING	589
NOTES	590
GENERAL NEWS	592
CORRESPONDENCE	593
HOUSING IN AMSTERDAM	594
HISTORICAL BUILDING CONSTRUCTION—XI	598
THE CONGREGATIONAL CHAPEL, LYME REGIS	602
OLD ST. PAUL'S CATHEDRAL	606
THE WEEK IN PARLIAMENT	607
THE TOWN PLANNING INSTITUTE	608
BUILDING TRADES EXHIBITION	609
MOTOR WORKS AT WATFORD	623
ELECTRIC LIGHT EQUIPMENT FOR MODERN BUILDINGS.—III.	624
BOOKS	625
THE BUILDING TRADE	626
THE ANALYSIS OF BUILDING COSTS	627
NEW BUILDINGS IN LONDON	628

ILLUSTRATIONS.

Geoffrey House, Tabard Street Area, Southwark.

We reproduce this week the plans of Geoffrey House, a new block of working-class flats just completed by the London County Council (Mr. G. Topham Forrest, F.R.I.B.A., Architect to the Council). The reclamation of this area is an interesting and instructive example of what can be done in the direction of slum clearance in congested districts.

The plans of Geoffrey House are interesting as they embody many of the latest developments in tenement design, the top floors being treated as maisonettes, in order to avoid placing living rooms on the top story; there is also an automatic electric lift, and a dust shoot for the disposal of rubbish from the various floors. The chimney stacks contain flues for ventilating the roof space, but the ventilating flues are shown blackened in on the roof plan to differentiate them from smoke flues; the space in the roof also communicates with the open air at intervals along the ridge.

Next week we hope to illustrate the elevations and sections of Geoffrey House, and a site plan of the area before and after rebuilding, together with an account of the scheme as a whole.

Swedish Legation, No. 27, Portland-place.

By kind permission of the Swedish Minister we are able to publish this week illustrations of the Swedish Legation in London. Messrs. Niven & Wigglesworth are the architects associated with the work, and Messrs. Holliday & Greenwood, Ltd., are the general contractors.

The original building in Portland-place is the Minister's residence. Since it was built it has suffered considerably from alterations and additions. Where possible the fabric and decorations have been restored approximately to their original state.

The Legation contains a collection of antique furniture and works of art of great beauty, which make it particularly interesting not only to the Diplomatic Corps, but to the Swedish community and British subjects who have the *entré* to the Legation.

The new wing contains the Chancery, with a suite of rooms for the Secretaries and Attaches.

The room entitled "Business Room" in our inset illustrations is the "Minister's Room."

EXHIBITION NOTES.

THE ROYAL INSTITUTE.

There is little to be said about the 113th exhibition of the R.I., in Piccadilly; the good things are largely buried under a cloud of mediocrity. Amongst the prominent exhibits there seems little to note after the delicate and idyllic pictures by the President, Sir David Murray, whose large picture, "The Atonement of the Thorns," makes a more telling appeal in the black and white rendering in the catalogue than in the original. We often recall the President's brilliant pictures of Picardy sunshine and wish he would repeat them. In the North Gallery we find a telling grey drawing by Martin Hardie of "The Bridge, St. Pierre-sous-Vezelay" (19), a clever rendering of a rain cloud in 23 by Dudley Hardy, a fine colour effect in "A Floral Decoration" (35), by H. Davis Richter, and good pieces by Terrick Williams (29), Percy Lancaster (67), Walter H. Allcott (73), and Frank Spenlove-Spenlove (97). In the West Gallery we find strong telling colour in E. A. Cox's "Cowdray Castle" (141) and "On the Terrace" (177), a brilliant sketch, "The Golden City" (122), by Hal Hurst, the excellent colour in "Twilight Honfleur" (255), by Terrick Williams, and a good rendering of "The Old Banners in Henry VII Chapel" (181), by Miss E. M. B. Warren. There are about a dozen pictures in the South Gallery which claimed our notice, including a fine piece by Frank Walton of "Moonrise" (427), a telling street scene (424) by Jas. Clark, Terrick Williams' fine study of tumbling sea (354), Dudley Hardy's brilliant work (361), and a charming picture of light and colour, "Dawn Upon the Mountain Tops" (292), by A. K. Brown. The well-illustrated catalogue shows several of the pictures to much greater advantage than in the originals.

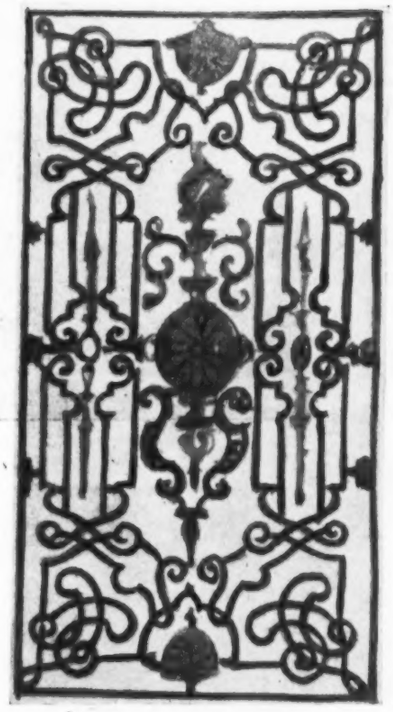
MEETINGS.

FRIDAY, *April* 21.

Architects' Olympian Night.—At Conference Hall, Olympia. 9 p.m.

Royal Institute of British Architects.—Reception at Olympia.

Architects' Welcome Club. — Banquet at Olympia.



Cast-Iron Grille at St. Pol, France.
From a measured drawing by MR. J. S. HARDIE.

Concrete Institute.—Mr. E. S. Andrews on (*a*) "Concrete Block Building," (*b*) "Reinforced Floors," (*c*) "Use of Pre-cast Work in Building Structures." At Olympia. 5.30 p.m.

SATURDAY, *April* 22.

Edinburgh Architectural Association.—Visit to Ravelston House and Craigcrook Castle.

MONDAY, *April* 24.

Architectural Association.—Mr. A. Keppler on "Modern Housing in Holland." At 34–35, Bedford-square, W.C.1. 7 p.m.

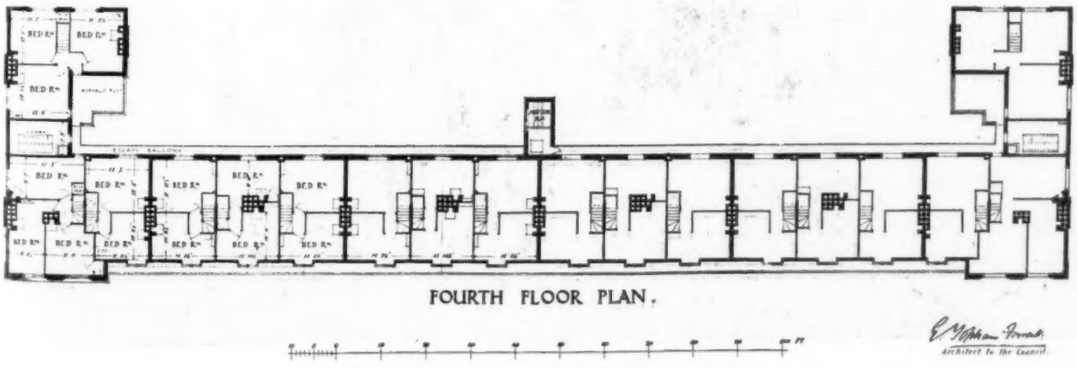
Royal Institute of British Architects.—Professor P. Abercrombie on "What we mean by Town-Planning." At Olympia. 6 p.m.

WEDNESDAY, *April* 26.

Royal Institute of British Architects.—Sir Lawrence Weaver on "Modern Domestic Architecture: Fashion and Style." At Olympia. 6 p.m.

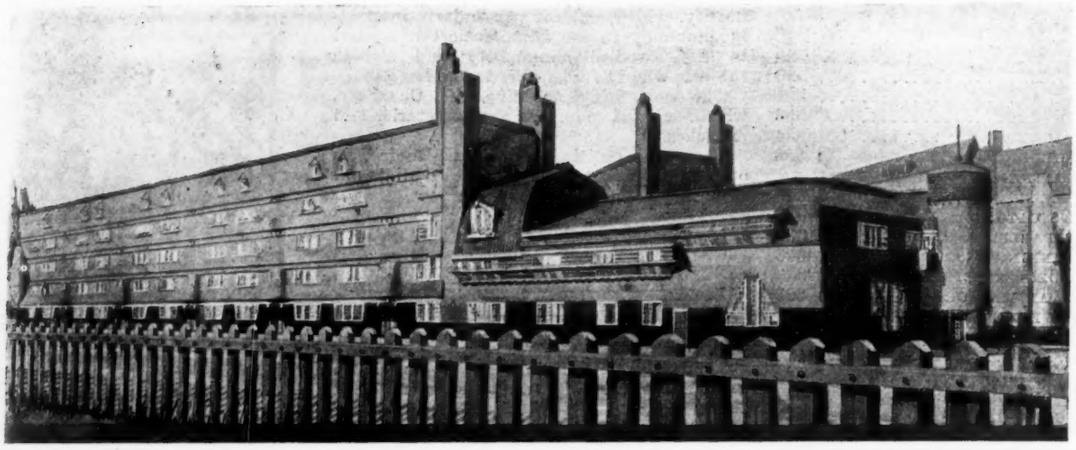
THURSDAY, *April* 27.

Concrete Institute.—Mr. W. Noble Twelvetrees on "Reinforced Concrete Piers and Marine Works." At 296, Vauxhall Bridge-road, S.W.1. 7.30 p.m.

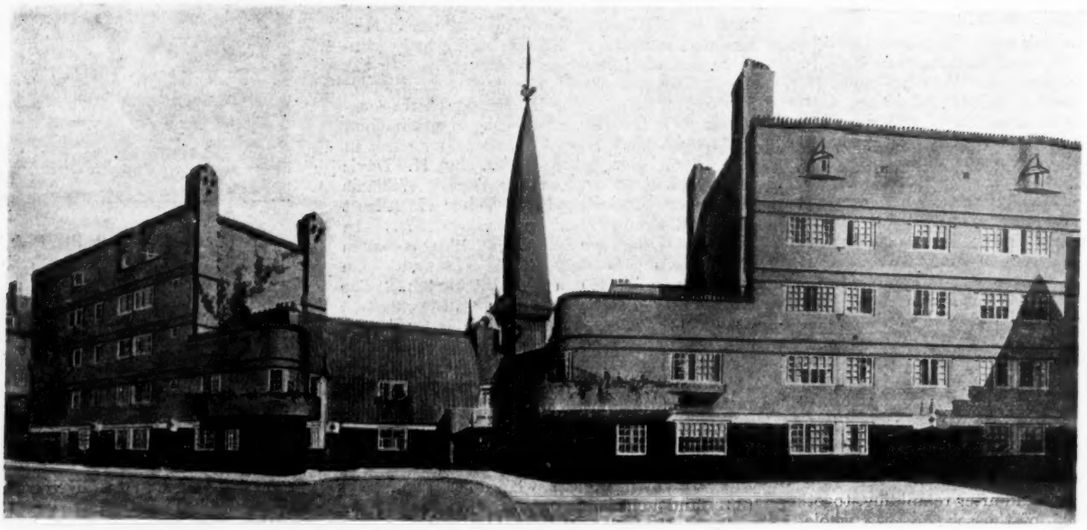


FOURTH FLOOR PLAN.

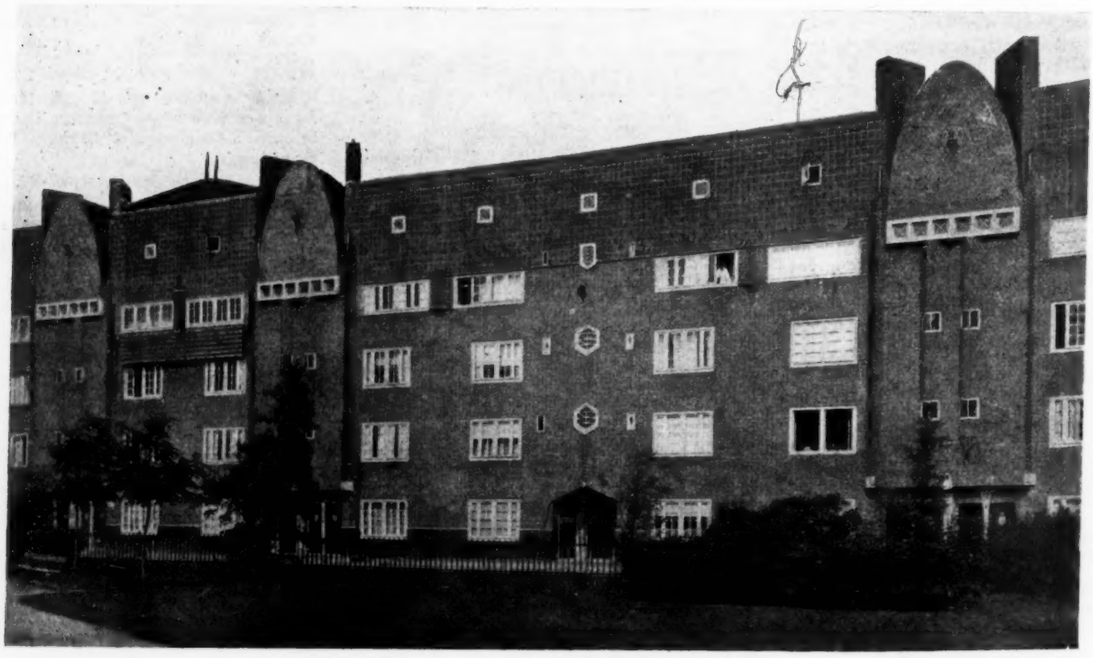
Geoffrey House, Tabard Garden Estate.
MR. G. TOPHAM FORREST, F.R.I.B.A., Architect to the London County Council.



Some Remarkable Houses by Mr. de Klerk.



The Most Striking Corner of Mr. de Klerk's Scheme.



New Municipal Houses. Mr. de Klerk, Architect.

Housing in Amsterdam. (*See p.* 594.)

Houses by Messrs. Kuypers & Ingwersen.

Houses in Eksterstraat, by Mr. J. C. van Eper.

Workmen's Dwellings built by the Patrimonium Society. Messrs. Kuypers & Ingwersen, Architects.
[A tablet on the archway records the prices of building materials, food, etc., at the period when the houses were built.]

Housing in Amsterdam. (*See p.* 594.)

OLD ST. PAUL'S CATHEDRAL.

A LECTURE was given on Wednesday by Mr. Herbert A. Cox, F.C.A., on "Old St. Paul's," illustrated by lantern views of drawings by the late H. W. Brewer, and photographs, at Olympia, presided over by Sir Lawrence Weaver, K.B.E.

The lecturer explained that Old St. Paul's took the place of a Cathedral built by the Saxons about the year 600, and burnt down during the Conqueror's reign. The second Cathedral stood almost exactly on the site of Wren's, its foundations being marked on the ground at the east end and could be identified at the west end by Queen Anne's statue. The Cathedral was built about the year 1100, when the nave, transepts and a choir were erected, but 150 years later the east end was extended. The length of the Cathedral was 600 feet, and it was the longest and largest church until the erection of St. Peter's in Rome. The spire was burnt down some 100 years before the Great Fire in 1666, which destroyed Old St. Paul's. It had a clock which bore—it is recorded—in Edward III's reign, the figure of an angel which pointed to the time both day and night. The spire had a ball and cross which were copied, to a certain extent, by Sir Christopher Wren for the present Cathedral. Comparisons were made between Old St. Paul's and Salisbury Cathedral, which was completed in Early English Gothic about the same date, but whereas its stone spire rose to a height of 404 ft., the timber spire of Old St. Paul's reached an elevation of 520 ft. It was pointed out that the classic architecture of Wren's Cathedral emphasised the horizontal lines and suggested repose which was desirable in the midst of the strenuous city life, but that it was really not suited to our northern climatic conditions, for the Cathedral had suffered in a way that was never intended—the lower portions of the building being covered with grime, while the upper were white because they were more exposed to wind and rain. One result of this was that the unreal two-storied appearance was emphasised. On the other hand, Gothic architecture which developed the vertical and slanting lines was best suited for shadow casting, and most appropriate for our churches and cathedrals, because the Classic suggested a Temple or public building of a secular character. Near Cheapside was the Charnell House, the lower portion of which was used for the storing of mortal remains and the upper story for a chapel. Between the Charnell House and the Cathedral was Paul's Cross, a place of preaching for some 250 years. There was a fund for preachers out of which they were paid, and to this day the City Corporation contributes out of a Paul's Cross Sermon Fund towards the cost of the Sunday morning preachers. A beautiful cross has been erected in recent years not far from the site of the old one, the foundations of which are marked close to the east end of the Cathedral. Some of the most stirring events in the nation's history had their origin at Paul's Cross. When the King came to hear sermons there, he occupied what was known as the King's Closet. This is seen as a projection from the north-east cloisters, or shrowds, as

MONUMENT TO WILLIAM HEWIT IN OLD ST. PAUL'S, REMAINS OF WHICH ARE IN THE PRESENT CATHEDRAL.

they were called. In the upper portion of the latter was the Consistory Court. The north transept entrance of the Cathedral was reached by a passage from Paternoster-row called Canon-alley. This passage remains to-day. Close to the door of the north transept was a little chapel called Sheryngton's Chapel, which was erected by Walter Sherygnton in the reign of Henry VI. He built this as a Chantry for himself, and, beside it, a library. On the north-west of the Cathedral was the Pardon Church Hawgh or churchyard, in the centre of which was the Pardon Church, "a place of great note," founded by Gilbert Beckett (the father of Thomas à Beckett, Archbishop of Canterbury) and wherein he lay buried. It was rebuilt by Thomas Moore, Dean of St. Paul's, in the reign of Henry V. On the wall of the cloister was the remarkable painting, "The Dance of Death." The Bishop's Palace was in the north-west corner of the churchyard, and the Bishop also had a small Chantry Chapel, while there was also what was called "The Lower Chapel." On either side of the west end was a Bell Tower, a feature which has been reproduced in the present Cathedral. Brewer believed that the Cathedral had a Galilee porch before the famous Italian Porch was erected by Inigo Jones about 30 years before the Great Fire. On the south-west of the Cathedral, beside the Bell Tower (which was also called the Lollards' Tower) was a parish church called St. Gregory-by-St. Paul's. The erection of the Saxon Cathedral was due to the Augustine Mission sent over by Pope Gregory about the year 600, and hence the name of this parish church, which was as old as Old St. Paul's. The Chapter House was octagonal in shape and entirely surrounded by two-storied cloisters. The foundations of the two buttresses on the south side and those of a portion of the Cloisters may be seen to-day. There was an entrance to the Cathedral from the south (between the Chapel House and the Church of St. Gregory) which was approached from what was termed Paul's Chain—a gateway from Carter-lane, and across it a chain was drawn at one time during service hours. In the south-east corner were the entrances to the Crypt of the Cathedral. There stood, at the south-east corner of the churchyard, a very lofty tower called the Clochier. This stone tower contained four bells, which were called the Jesus Bells, because they were originally from the Jesus Chapel. The spire was of wood covered with lead, and surmounted by a gilded statue of St. Paul. The Nave was called Paul's Walk. In the Great Fire of 1666 the roof of the Cathedral caught alight and little but the walls survived. The Choir contained many notable graves and monuments, including those of two Saxon Kings; Hollar's drawings of some of these were shown, together with photographs of the mutilated effigies corresponding to them, which are to be seen in the Crypt to-day (see page 607).

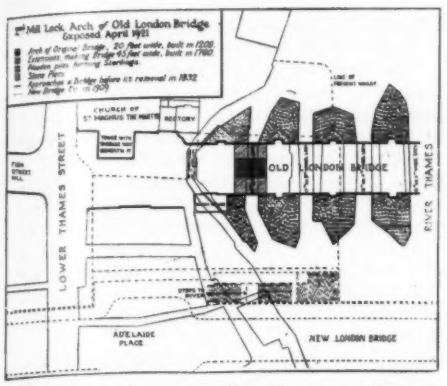
Referring to the model of an arch recently discovered close to the City end of London Bridge and to the plan reproduced on page 607, Mr. Cox explained that Adelaide House stood between the Bridge and Magnus-the-Martyr Church, and when it was pulled down last year and the foundations for a new Adelaide House were being dug, this arch was exposed and found to be the second of the Mill Lock arches of Old London Bridge. The original bridge was erected about the year 1200 by Peter of Colechurch in Cheapside, and it was almost certain that the stones were to be seen to-day in the arch which was depicted in the model. Many suggestions had been made for its preservation, and hopes were cherished that it would be allowed to remain in its original position, and form part of the underground premises of the new Adelaide House, or that it would be re-erected elsewhere.

In moving a vote of thanks to the lecturer, which was passed with acclamation, Sir Lawrence Weaver said he did not think we should run down Wren because we admired the Cathedral which disappeared in the Great Fire. Comparing the height of Old St. Paul's, the chairman said Lincoln tower was made of wood covered with lead, and was the same height within a few feet, and it also perished by fire. Regarding the porch of Wren's Cathedral, he pointed out the remarkable influence of materials on design. Wren's original plan was for a porch of one story, but being unable to procure stones large enough to make the drums of the columns, he was compelled to build the design to two orders instead of one..

A vote of thanks to the Chairman, moved by Mr. Reginald Hallward, was heartily accorded.

MONUMENT TO SIR T. HENEAGE IN OLD ST. PAUL'S.

REMAINS OF MONUMENT TO SIR T. HENEAGE IN THE PRESENT CATHEDRAL.



Mill Lock Arch of Old London Bridge.

(*See p.* 606.)

THE WEEK IN PARLIAMENT.

Westminster, *Wednesday.*

Alterations to Parliament Buildings.

During a recent debate on a Vote of £75,250 for expenditure in respect of the Houses of Parliament buildings, Sir John Gilmour, replying for the First Commissioner of Works, said the department had, as far as possible, cut down expenditure; in fact, it had exceeded considerably the first demands for economy made upon it, and it had complied of its own volition with all the requests of the Geddes Committee. The work of repairing Westminster Hall would be completed this year. The total cost was estimated at £120,000. The question of decayed stonework was causing the gravest concern to the department. The decay was obvious to anyone who took an interest in the building. The department had asked for only a small sum this year so that it could remove those portions of decayed stonework which would be a danger either to members of the House or to the public in the vicinity of the building. In the judgment of the department it was impossible in the circumstances to ask for anything like a sufficient sum to replace all decayed stonework at present. This was a matter which went back to the early building of the Houses of Parliament and to the unfortunate choice of stone. It was also due to the fact that connections had been made in many cases by iron dowells. That, by expansion and contraction, led to the splitting of the stonework. They could deal with the matter now only in a temporary way. As to the ventilation of the House of Commons, the Office of Works, in conjunction with the National Physical Laboratory, was carrying out certain experiments with a model of the Chamber. They must not proceed with precipitancy. The same argument applied to the alteration of the shape and size of the Chamber. In all the circumstances he did not think they were so badly off.

Buildings in the Parks.

Sir J. Gilmour, in reply to Mayor Glyn, said that the scheme for the clearance of the Royal Parks and the Embankment-gardens was making very satisfactory progress. Up to the present the demolition of six sets of temporary buildings had actually been completed or was about to be completed shortly. In five of the remaining cases the work of demolition had either been started or would be put in hand in the near future. It was expected that, by the end of the summer, all the temporary buildings would have been cleared away, with the exception of Birdcage House in St. James's Park, the Aircraft Disposal Huts and Gloucester Gate Building in Regent's Park. As regarded Birdcage House, he hoped it might be possible to start demolition in the autumn. The new building at Acton was practically complete and had been partly occupied for nine months. It would be occupied to its full capacity by the middle of May next.

Royal Geological Museum Site.

Sir J. Gilmour, answering Major Glyn, said that the approximate value of the building occupied by the Royal Geological Museum in Jermyn-street was estimated, as it stood, at £80,000. The site was the property of the Office of Works and they were not at present in a position to assess its value, nor perhaps would it be desirable for any estimate to be made public.

Glasgow Houses.

Mr. Pratt informed Lieut.-Colonel Henderson that as at March 31, 1,003 state-assisted houses had been completed in Glasgow; 1,890 were in course of construction; and 1,919 had been sanctioned but not commenced.

Bathrooms in New Houses.

Answering a further question from Mr. Myers, Sir A. Mond said that over 90 per cent. of the houses in approved schemes had separate bathrooms. In a small proportion of the houses the bath was placed in the scullery and was usually so arranged that when in use access to other offices was not prevented. In some rural houses where there was no constant water supply, or where the drainage effluent was difficult to deal with, no bathroom or fixed bath had been provided, but in many of these cases the house had been so planned as to enable a bath to be installed when conditions as to water supply, &c., allowed it.

Applications Withdrawn.

Sir A. Mond stated that he understood that evidence given before the Rents Tribunal indicated that applications to local authorities for houses, made before the houses were built and at a time when wages were high, had, in many instances, been withdrawn subsequently.

Dartford Shortage.

Mr. Mills asked the Minister of Health if he was aware that demolition of slum property unfit for habitation, had been followed by the reception of the former occupants in Dartford infirmary owing to the shortage of houses in that area; and whether he was now able to resume the building programme promised in 1918?

Sir A. Mond said that he was aware of the shortage of houses in the district. Since the beginning of this year approval had been given to erecting or obtaining tenders for 28 houses in the Dartford Urban District and 66 houses in the Rural District.

The New All-England Lawn Tennis Stand, Wimbledon.

Captain C. Stanley Peach, F.R.I.B.A., the architect, conducted an interesting test upon the new centre court stand at Wimbledon recently. This stand is being constructed in reinforced concrete, on the Kahn system, and is to be used when the championships are played in June. It was decided to place upon the stand a human load, as it was desired that the test should closely approximate—but exaggerate—the use to which the stand would eventually be put. Workmen in the employ of the contractors, Messrs. Stuart's Granolithic Co., were therefore marshalled by Capt. Peach on to the lowest step of the centre bay on the west side of the stand, the men crowding together in order to bring the greatest possible load on to that portion of the stand. As the seats have not yet been fixed, a greater number of men were actually assembled on this bay than will ever be possible when the stand is in use. At the word, "about turn, at the double," the men swung round and swarmed up the steps to the top of the stand. They remained there until the word was given, when they clattered down again and dispersed to the exits. The deflection which was registered when the stand was under load was, we are informed, hardly perceptible, and the result of the test is considered highly satisfactory. When completed, the stand will be called upon to seat some 10,000 spectators.

HOUSING AND TOWN-PLANNING NOTES.

Irlam Housing Land.

Mr. J. D. Wallis, Official Arbitrator, sitting at the Chartered Accountants' Hall, Manchester, heard further claims against the Irlam Urban District Council in respect of the Council's compulsory acquisition of land in Liverpool-road, Irlam, near Manchester, for housing purposes.

Mr. J. W. Marsden (Superintending Valuer) and Mr. Cooke (Clerk to the Council) appeared for the Council, while Mr. Ashworth (of Messrs. Ashworth & Inman, solicitors, of Manchester) represented the claimants.

Mr. F. C. Brew, builder and contractor, claimed for 10¼ acres.

Mr. Ashworth, for the claimant, said that 336 houses had been erected in Irlam by Messrs. Brew Brothers, and claimant bought the land with the idea of developing it when times improved. It was the best land in the Cadishead district or Irlam. If Mr. Brew had developed the land he would have built 20 houses to the acre. A provisional contract was entered into with the Council on April 15, 1919, at a price of £400 an acre. The value of Cadishead land had increased since the date of the contract, but his client only claimed the contract amount. The Clerk to the Council was a skilled adviser, and the contract constituted a *bona-fide* offer.

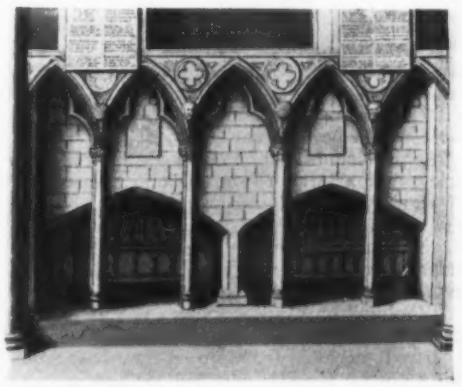
Mr. E. Gunson, surveyor, giving evidence for the claimant, valued the land at £4,134.

Mr. F. C. Brew stated that on September 13, 1918, he offered the land to the Council at £400 an acre.

The Arbitrator has since awarded that the acquiring authority is to pay the owner the sum of £3,100, and interest at 5 per cent. from September 7, 1920, until payment of the compensation. The acquiring authority is to pay the fees on the award, and £40 towards the owners' costs.

Messrs. Brew Brothers claimed for about 7½ acres, and Mr. Gunson, on their behalf, submitted a valuation of £3,092 15s. 2d. Mr. Nicholson, for the Council, valued the land at £275 per acre or £2,077. The Arbitrator has awarded that the acquiring authority is to pay the owners the sum of £2,525, and interest at 5 per cent. from September 7, 1920, until payment of the compensation. The acquiring authority is to pay the fees on the award, and £40 towards the owners' costs.

Mr. J. Rimmer (for Ellen Rimmer, Ada Bridge, Gladys Rimmer and Harold Rimmer) claimed for about 4½ acres. Mr. Gunson, for the claimant, valued the land at £1,682 or £400 an acre, while Mr. Nicholson, for the Council, submitted a valuation of £207 an acre or £870. The Arbitrator has awarded that the acquiring authority is to pay the owners the sum of £1,156, and interest at 5 per cent. from September 7, 1920, until payment of the compensation. The acquiring authority is to pay the fees on the award, and £35 towards the owners' costs.



Tombs of Saxon Kings in Old St. Paul's: Sebba (*d.* 677) and Ethelred the Unready (*d.* 1016). (*See p.* 606.)

THE TOWN-PLANNING INSTITUTE.

ZONING AND LAND VALUES.

MR. R. REAY NADIN presided on April 7, at 92, Victoria-street, S.W., over a meeting of the Town-Planning Institute, when a discussion took place on a paper by Mr. F. G. Baxendale on "The Effect of Zoning on Land Values."

MR. BAXENDALE said the effect of the sporadic development of land in the past had not only resulted in the destruction of the natural beauty of the country, and injuriously affected the happiness and health of the people, but in certain instances it had sterilised the value of the land and minerals. The refusal of individual owners to allow their lands to be developed consistent with the public interest had not only resulted in congestion and confusion, but had caused injury to the value of their own land and that of other people. On the other hand, many owners had served the public as well as their own interest by prohibiting mixed development. The provisions of the Housing and Town-Planning Acts anticipated that in certain respects the complete zoning of all undeveloped land within local government areas with a population of over 20,000, and even districts with a less number of inhabitants might be dealt with. Over a large part of the country, therefore, the individual schemes would be eventually dovetailed, and the man who desired land for a particular purpose would be restricted in his choice to prescribed areas and circumscribed sites. There were stated to be one million landowners in England and Wales (exclusive of the Metropolis), 703,000 of whom owned less than one acre. On the other hand, more than half the land in the kingdom was possessed by about 7,000 people. It was necessary to remember these facts in zoning so large an area, and especially in making comparisons with other countries of larger areas.

If injustice to individual owners was to be avoided, great care would be necessary in the selection of zones. In the best schemes hardship must occur, as many of the best residential sites were peculiarly adapted to certain industries, and *vice versa*.

The boundaries of zones would present interesting problems; there was a tendency in some schemes to bring the edges of zones to roads, railways, and rivers; this was most objectionable, not only from the point of view of values but from æsthetic considerations. While the land might be enhanced in value upon one frontage, it might be depreciated equally upon the other. In his opinion, the edges of zones should, wherever possible, cross lines of communication at right-angles and embrace both frontages. The selection of shopping sites must improve the value of the land of some at the expense of many, but in virgin areas the allocation and consequent enhancement would be a creation of the scheme and subject to the betterment clause. Less injustice would be caused if shopping sites were placed on both sides of a street. He could never appreciate the reason for putting a park on one side of a main thoroughfare with business premises upon the other. The development of the frontages of Hyde Park and St. James' Park would provide the money for a material reduction in the national debt, and if the roads passed through the park with an equal length of frontage on each side the effect upon land value would be less marked.

The problem of what to do with the frontages of the new arterial roads was one upon which he scarcely dared to express an opinion. He was sure that the land upon each side of the Strand would be of less value if the street were wider than at present. Speed in traffic was of greater importance than width of roadway.

"Zoning" built-up areas was not at present intended in Great Britain, and careful thought appeared necessary before it was adopted. Many towns already required rebuilding, and the need for some control was obvious. Height "zoning" in London was already a burning question. The effect upon land values would be much greater than in the case of urban areas; it might bring ruin to individuals, make mortgage insecure, if it did not bring re-development to a standstill. It appeared that, apart from some arrangement for pooling losses or gains, "zoning" developed areas was not practical in this country.

Restrictions as to density might also affect land values, but the supposed injurious effect of these provisions might be easily exaggerated. A smaller number of houses to the acre did not of necessity mean a smaller profit from the land when developed. If in the prescribed areas, parks, open spaces and allotments might be reckoned in the calculation and road construction could be varied with traffic the effect should in most cases be negligible. This question was also largely a matter of lay-out: the expert land developer of the past who crowded thirty houses to the acre very often spent a great deal of money unnecessarily. The most economical lay-out in flat land was obviously by parallel roads at two plot distances; the number of houses was in exact ratio with cost and building frontage, *i.e.*, the fewer houses the greater cost per house. Where roads were parallel at equal plot distances every cross road wasted a piece of road equal to the depth of the house plots and also wasted twice the road width of available land. Cross roads wasted double—wherever possible inter-communication by slips was necessary in the interests of economy. With equal depth of plots and equal area to be developed, every right angle meant the loss of two houses at thirteen to the acre. Every acute angle might mean the loss of even six. Apart from the extra cost of construction, if any, a curved or circular road was more economical than a road with right or acute angle bends. That was particularly the case in undulating land. The old idea that every house must have its own road frontage of equal amount was rapidly becoming absolute. By a wise adjustment of the ground rent to the area of the plot and the size of the house, grouping the houses according to their rack rents, the same yield per acre might be obtained from varying densities.

In conclusion, it appeared to him that while the immediate effect of "zoning" would be to create uncertainty and tend to hamper the ready transfer of land, the ultimate effect must be the stabilisation of land values and should establish and maintain the capital value of its component parts. In so far as the schemes approximate to the ideal the result would be beneficial, if all the land in the scheme was considered, while at the same time the land of individual owners would be injuriously affected, although it was quite possible they might never be aware of it.

MR. E. R. ABBOTT said values were of vital importance, and whilst it might be more or less easy to carry out the principle of zoning in an ordinary suburban district where the areas were practically all residential, it was different when they came to a large industrial area. It was difficult to have too much elasticity because of the clauses relating to compensation and betterment, but he thought they had all come to the conclusion that power must be given to someone to make variations in schemes as circumstances changed.

MR. E. G. ALLEN, F.R.I.B.A., said he did not think it was a defect to put shopping areas around parks; the letting of the frontages of Hyde Park would bring in a large sum of money, but he was doubtful if that would make up for the amenity loss.

SIR EDGAR HARPER (Chief Valuer to the Board of Inland Revenue) said at present the owner of an estate had only to submit plans showing how he proposed to lay it out, and if the plans complied with certain regulations and by-laws the local authority had no option but to approve it. The owner then proceeded to zone, not on the basis of the growth of the town or the welfare of the people who lived therein, but from the point of view of his own pocket. To his mind the idea of a town-planning scheme which was to govern the development of a town for all time was the worst idea they could possibly have. They could not foresee what industrial or other development there might be effecting the growth of a town, and they would only be making a rod for their own backs if they made the scheme too extensive or rigid.

MR. J. P. ORR said in the United States they got over the difficulty of compensations by not paying any at all. Zoning was directed not against all change, but only against injurious change. The sporadic changes which had done so much to convert good residential districts into slums in London were impossible under zoning ordinances.

MR. I. G. GIBBON said the question of zoning in built-up areas was almost child's play as compared with the zoning of undeveloped areas. In New York they did not plan for a thousand years or even fifty years hence; they looked ahead for five or ten years, and that was the line on which they should proceed in this country.

MR. H. R. ALDRIDGE said the idea of a plan which would last for ten years lacked vision and was not worth talking about; the wisdom of town-planning came in taking the long view.

MRS. WOOD (United States) described the practice in New York with regard to zoning, and suggested that the Commission ought not to be charged with lacking a long vision because it gave attention to the immediate future.

MR. HAROLD WILLIAMS said he thought it would be better if town-planning and zoning provisions could be made by representatives of local authorities, the district valuer, and people interested in the health and amenities of a town.

FORCIBLE RE-ENTRY: STATUTORY TENANTS.

THE case of Cruise *v.* Terrell (noted in *The Builder* for September 2, 1921) has also been carried to the Court of Appeal where the decision of the Court below has been confirmed except as to the damages (which we ventured to say seemed excessive and which have now been reduced from £60 to £10). We only propose to refer very briefly to this case. In February, 1919, the plaintiffs (two ladies) had taken from the defendant a cottage to use as a week-end cottage, and the rent appears to have been £8 per annum paid in advance. They occupied the cottage for two years and were desirous of continuing their tenancy, but before the expiration of the second year there was some correspondence in which it had been pointed out that the tenancy could not be continued at the same rent, and also that the defendant required the cottage for a keeper in the whole-time service of a tenant of his, and when the plaintiffs tendered rent for a third year it had been refused. The plaintiffs remaining in possession, the landlord had sent a man to the cottage to place a new lock on the door, and the plaintiffs were locked out. It was also alleged that the defendant had threatened to remove the furniture, but in the Court of Appeal the Master of the Rolls stated that no damage had been done either to the house or to the furniture, nor had anything been done in the least in the nature of a "high-handed outrage."

The plaintiffs brought this action for damages for breach of contract and for trespass, whilst the defendant counterclaimed for possession, and alleged that the tenancy was terminated and the plaintiffs were trespassers. The latter contention seems to have been based on the assumption that the Rent Act did not apply to a tenancy such as this for a certain term, but the Court of Appeal negatived this contention and affirmed the court below in holding that the Act did apply and that, therefore, the plaintiffs were statutory tenants, and that being the case the landlord could not forcibly re-enter. This principle was laid down in dicta delivered by the court in the case Remon *v.* City of London Real Property Co., Ltd. (*The Builder*, February 11, 1921), but it is important to note that those dicta have now been approved by the Court of Appeal in the present decision.

THE BUILDING TRADES' EXHIBITION.

We give on this and the following pages further notices of the stands at the Building Trades' Exhibition at Olympia, which closes on the 27th of this month.

It is reported that a new hall is to be built at Olympia by Messrs. P. & W. Anderson, Ltd., at a cost of £150,000.

The stand of *The Builder*, Ltd., is No. 118, Row F, where, in addition to a comprehensive display of books of interest to architects, builders and surveyors, models of Old St. Paul's, Old London Bridge, and the recently-discovered arch of Old London Bridge are on view.

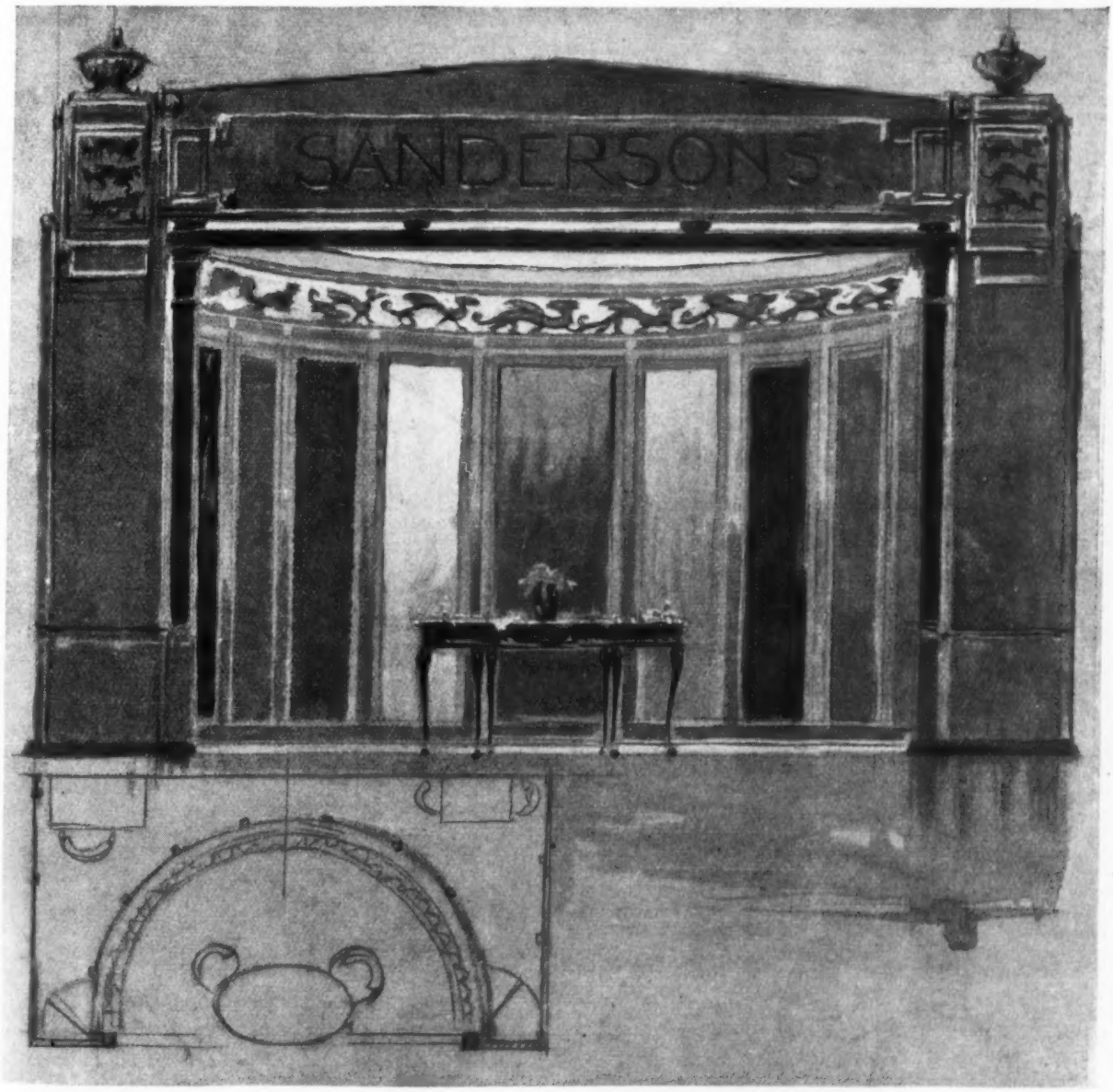
PAINTS, ENAMELS, AND VARNISHES.

The application of pigments to the surfaces of finished buildings serves a threefold function. The preservation of perishable materials, and the provision of a clean, sanitary, non-absorbent coating combine with the desire for a pleasant scheme of colour to ensure for the art of painting the widest possible popularity. Civilisation has embarked upon a course for the elimination of disease germs and the dirt in which they thrive, and among the methods employed painting plays a conspicuous part. Periodical white washing is legally required in certain premises, and the idea that cleanliness and brightness are necessary to health is impressed upon all who see the successive coats applied. Students of hygiene tell us that the artistic side of the question is also important in that bright, advancing colours stimulate activity, whereas schemes involving soft, retiring tones exert a calming influence and are suggestive of repose. That there is an element of truth in the theory is accepted generally, though the individuality of each observer involves some difference of opinion as to the effect of particular hues. The old association of white with gaiety and black with sorrow seems to be founded upon a natural law which finds its unintended expression in the colour preferred for exhibition buildings and other centres of amusement, several such having been known by the name of "White City," although officially described by names based upon historical or geographical associations, and containing no reference to colour. In a good paint, beauty of hue should be combined with the quality of endurance; for nothing is more vexatious than to find the decorative scheme upset by the disappearance of one or more of the component colours. Added to permanence of hue, permanence of attachment to the background is necessary to avoid crazing and flaking, though in this respect the composition of the paint and the method of its application have to be considered in conjunction. How the preservative qualities of paints, enamels, varnishes, distempers, &c., can be combined with an attractive appearance is clearly demonstrated on the stands of the various manufacturers, who show some excellent specimens suitable for practically all purposes.

A special advantage claimed for the Mill brand distemper manufactured by Messrs. Bayley & Halstead, Windmill-lane, Deptford, S,E.8 (Gallery Stand 32, Row B), is that its cheapness permits of several coatings being applied at intervals, covering a lengthy period, thus assuring continual freshness at no greater cost than washable distemper.

Whoever was responsible for the design of the stand of the British Emaillite Co., Ltd. (Brentfield-road, Stonebridge Park, Willesden Junction, N.W.) can take credit for having been distinctly successful. It attracts by reason of its colouring, and is an excellent testimonial to the makers of "Emaillite" varnishes, enamels, paints, &c.

The stand (No. 203, Row K) of Messrs. Walter Carson & Son (Battersea, S.W.) presents a familiar appearance, and it appears that the stand is practically the same as that of last year. This fact is, perhaps, one of the best testimonials which could be advanced as to the wearing qualities of the firm's enamels and paints, for several of the panels which form the central portion were painted with "Japolite" as long ago as 1912, and although they have been at various exhibitions and have only been washed down, they presented



£20 Prize Design, by Mr. J. Godwin (First Atelier.)
Royal Academy Ateliers Building Exhibition Stand Competition.
Other designs in this Competition were given in our issues for April 7 and 14.]

a very fresh appearance. Messrs. Carson & Son make all kinds of paints, including pure liquid for the highest-class exterior and interior decoration; "Muraline," a washable water-paint; "Coverine," for white undercoating; metallic paints; aluminium paint for iron-work, water and steam pipes, &c.; graphite paints for iron and steel construction work; hard gloss paints that give a hard enamel-like finish; and "Matamure," which gives a perfect matt finish. In addition to the paints mentioned there are shown also "Vitrolite," a substitute for white lead; "La Belle" enamel, in thirty-two shades; washable paste distemper; Maurice's porcelain, in fifty colours, for baths; and "Plastine," claimed to be an imperishable putty.

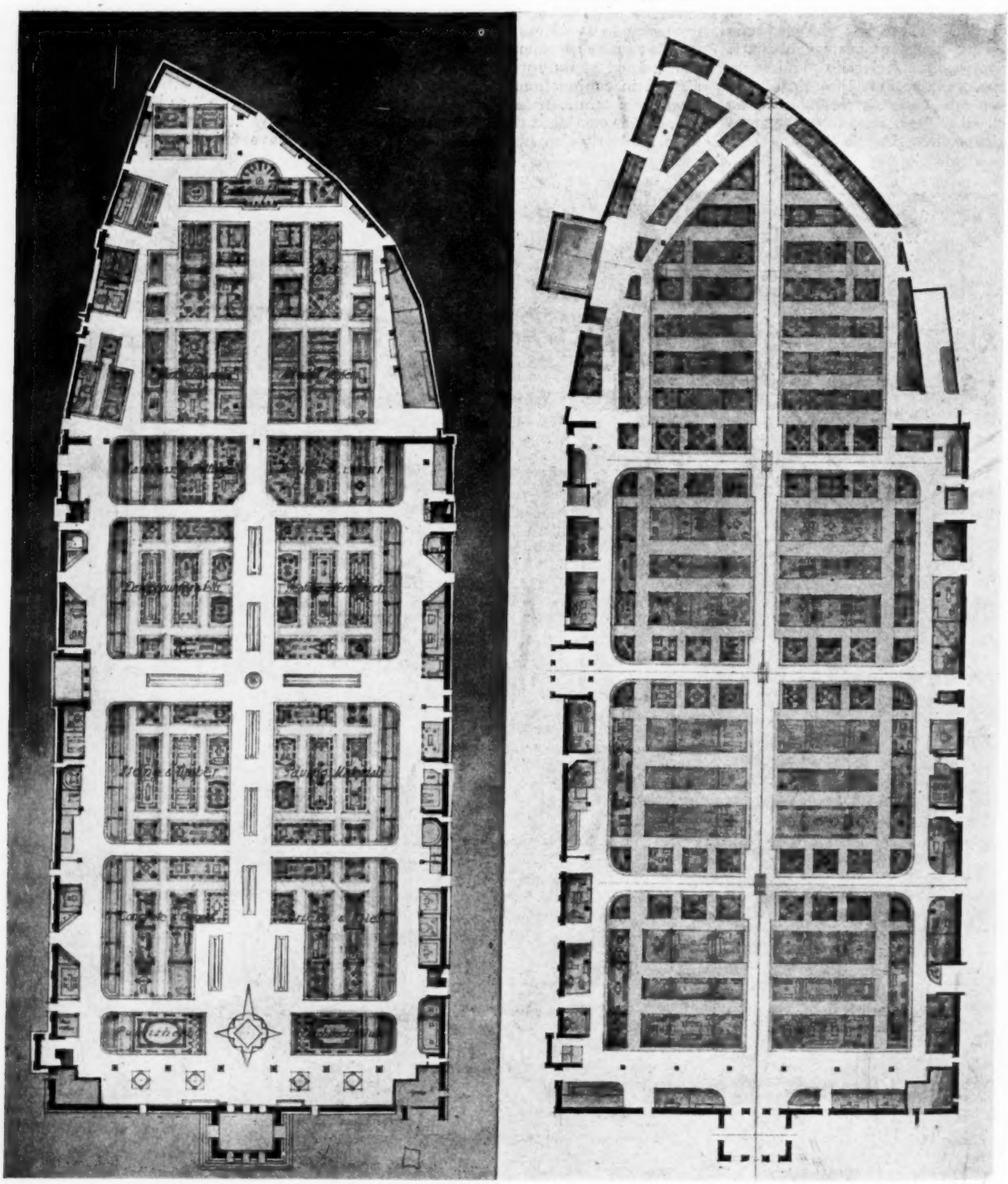
Various products are displayed to advantage on the stand of the Gelesco Paint Co., Brent Wharf, Brentford, including paints, enamels, distemper and liquid dryers. The range of colours in paints and enamels offered by the firm is very comprehensive.

Titanium White is a new pigment, recently introduced into this country from Norway, and some remarkable characteristics are claimed for it. On the stand of Messrs. R. W. Greeff & Co., Ltd., Thames House, Queen-street-place, E.C. (No. 168, Row J), various samples are shown indicating stages in the manufacture of the pigments from the raw ore to the finished article.

Rich red and dense black lacquer effects, with white "Heolin" enamel form a striking contrast on the stand of Messrs. Hadfield (Merton), Ltd., of Mitcham (No. 88, Row E). Among other products of this firm are shown "Heolin" obliterating and finishing paints, which in conjunction give an excellent finish in two coats on bare wood for interior work. These paints have been used on over 100 housing schemes throughout the country, and in a number of large public buildings, where this two-coat process has given satisfactory results at a low cost. Specimens of wood treated with the firm's varnishes are also on view.

The stand of Messrs. Wm. Harland & Son, Merton, S.W.19 (No. 152, Row H), is built in the likeness of a pavilion of the Renaissance style, and its decoration is done throughout with Harland products. The imitation Sienna marble pilasters finished with Harland's white marble varnish and the columns treated with the well-known "Snowite" glossy enamel are most striking.

High quality hand-printed and machine-made wall-papers are shown by Messrs. Heffer, Scott & Co., Ltd., 56 and 21, Berners-street, London, and 9, Barnsbury-park, Islington, N., at Stand No. 146, Row H. The stand is divided into a number of sections, each of which is carried out in a separate distinctive style of decoration. An attractive range of panel decorations and many exclusive friezes and borders are among the exhibits. Recently the firm has developed the manufacture of thin borders of appropriate design for covering the vertical joints which are always more or less visible with wall-papers. Attractive panel effects are produced by this thin border, as may be seen on the stand. An excellent painted imitation leather screen manufactured of paper on canvas is an exhibit of interest. One of the sections of the stand is utilised to show the pleasing decorative effects obtainable with "Keystona," a flat oil paint for interior use.



Commended Design, by Mr. W. W. Wood (Atelier Billerey). Commended Design, by Mr. John Allcorn (Atelier Billerey).

Royal Academy Atelier Building Exhibition Lay-out Competition.

Among the suppliers of wood preservative are Messrs. Major & Co., Ltd. (Hull), with Solignum. More than ever has the desirability become recognised of using a preservative on wood used externally, both above and below ground, and Solignum has successfully passed many tests. Not only is the preparation a preservative, but it can be had in many shades and has a value as a decorative stain. The woodwork of the stand is of a pleasing shade of brown. As an internal stain also Solignum has a vogue, and, as again demonstrated in the hut, floors so stained do not show scratches or wear into bare patches. The firm's stand is No. 104, Row F.

A neat and cool-looking roofed erection forms the stand of Messrs. H. J. & C. Major, Ltd. (Bridgwater), who make interlocking tiles in Roman, angular, Grecian, "Wellbeck," and plain forms. The stand No. is 180, Row J.

Messrs. C. H. Musselwhite & Son, Grand Surrey Canal, Deptford, S.E. 8 (Stand No. 76A, Row D), are showing "Cebino," a ceiling paste distemper, made in cream, ivory and blue-white. Amongst the merits claimed for it are that it works smoothly and easily over all surfaces and will keep sweet indefinitely. Other exhibits include "X D" size in cartons and firkins: paper-hangers' paste; linseed oil putty; and gilders' ball, town ball, gilders' lump, Paris white, and powdered whiting.

The special display on the stand of Messrs. Ottley & Ellson, Ltd., 283, Borough High-street, S.E.1, is the "Melena" all-British damp-proof gloss paint which will, it is claimed, dry hard "on a wet wall or a candle." As evidence of justification for this claim of damp-proofness, a brick which has been for the most part painted with "Melena" is shown standing in water. The stand is No. 170, Row J.

It is safe to say that not a single person visiting the Exhibition passed the stand of Messrs. Thomas Parsons & Sons (315 & 317, Oxford-street, W.) without taking note of it. It was designed as H.M.S. "Endelline," and the whole design was used for showing practical applied examples of Parsons' enamels, varnishes and paints. Certainly it would be hard to beat the coating as applied to the large gun which pointed over the bow. With regard to the products of the firm which were exhibited, there was "Endelline" enamel, for either interior or exterior use. This produces a finish like porcelain and it may be washed repeatedly without deterioration. "Endleflat" enamel is a flat enamel which produces a soft flat finish. It is not every class of work which will bear the expense of a high quality enamel like "Endelline," but in such cases "Lacreite" enamel will be found an excellent substitute. "Unicate" flat finish is not a distemper, but is a useful wall decorative material, and the surface can be washed a good many times without ill results. Other of the firm's products were also demonstrated and exhibited. The stand is No. 125, Row G.

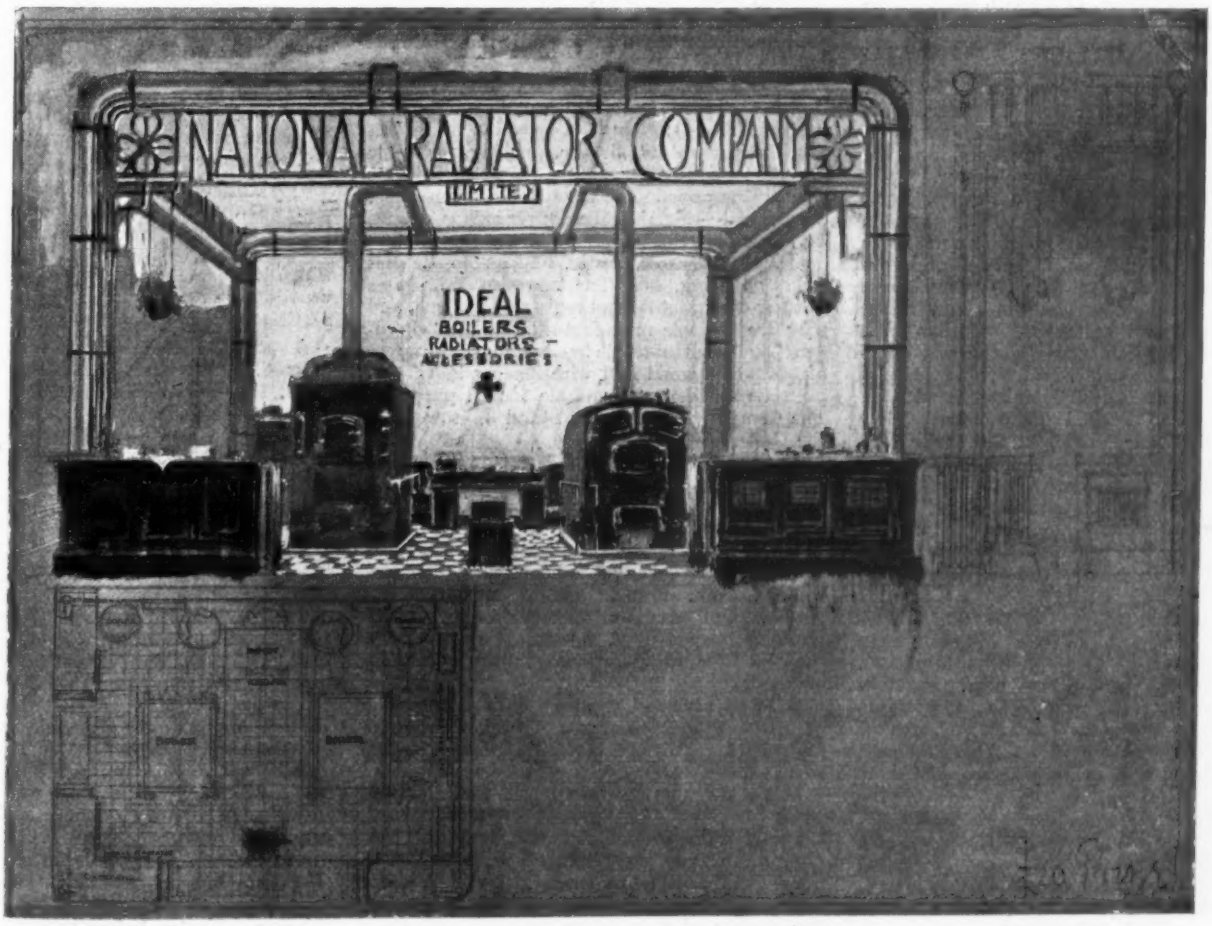
The stand in occupation by Messrs. C. A. Peters, Ltd., Derby, London and Liverpool (No. 67, Row D), is very neatly arranged, and needless to say, has been treated, so far as its woodwork is concerned, with Peterlineum. Proof of the preserving properties of the compound are not lacking on the stand. We will mention but two—a specimen showing a test made by the Midland Railway, in which untreated wood is shown to be much affected, while treated wood subject to a similar test shows no sign of deterioration at all. There is also a piece of ordinary garden trellis which was treated with Peterlineum ten years ago and is almost as good to-day as when erected.

Messrs. Plaster Paint, Ltd., 17, Percy-street, Tottenham Court-road, W. (Stand 7, Row B), are providing an attraction in the form of a model factory surrounded by railway lines on which miniature trains run busily up and down. The *raison d'être* of the stand, however, is to call attention to the merits of "Caementum" paint, for which Plaster Paint, Ltd., are the sole concessionaires in this country.

Messrs. A. Sanderson & Sons, Ltd., 52–55, Berners-street, W., have a handsome stand (No. 108, Row F), occupying a central position in the exhibition. The main frame of the stand is painted white, with narrow black lines for ornament. The sides are used to display—as panels—three of the firm's chief specialities—Durolave, Eton Rural Cretonne fabrics, and wall-papers.

WOODWORK AND JOINERY.

The increased prices following upon the tremendous expenditure of timber during the war stimulated invention in carpentry and joinery as in other constructional matters, but strangely enough while manufacturers of concrete and terra-cotta blocks strove to provide a substitute for expensive timber a proposal to introduce wooden houses was made the centre of a Press campaign. This proposal, which would have been considered ridiculous in 1914, has actually been put into practice in many parts of England. Inhabitants of damp old stone-built cottages in low-lying villages have learned to envy the dryness of a timber hut through seeing the effects which have been produced in Army huts when intelligently transformed for habitation with suitable interior wall and ceiling linings, and appropriate fittings. In the height of the campaign to sell off surplus war stores the praises of timber dwellings may have been sung with rather too much fervour in certain quarters, but, rightly used, with suitable precaution as to ventilation and isolation from wet, wood may be a very enduring material. Concerning the manner of using wood, two schools with diametrically opposite methods exist simultaneously. One would have all timber work rough-hewn after the manner of Robinson Crusoe and Man Friday, while for the other no finish can be too smooth. The conspicuous tool-marks of modern adze-finish are sometimes carried to lengths that may raise a smile, especially when it is remembered that the good adze-work produced by the barge-makers, who still maintain the old tradition, can hardly be distinguished from a planed surface. A consistent scheme, however, is its own justification, and given suitable conditions the use of a rough finish may add a pleasing texture



£20 Prize Design, by Mr. J. Godwin (First Atelier).

Royal Academy Ateliers Building Exhibition Stand Competition.

to the surface of a fine material. As a preparation for a painted or enamelled surface a smoother treatment is indicated, and in the great majority of cases it is supplied in the machine-produced joinery of the present day. The tendency towards a sanitary smoothness of house interiors has been assisted by the invention of rigid composite boards which permit of the use of large panels without anxiety as to warping and splitting, thus eliminating some of the dusty ridges which housewives detest, and whose cleaning involves so much time and labour. Many beautifully coloured and figured hard woods from the Dominions are now available, and the polished surface which it is possible to obtain on most of them combines an artistic charm with the practical advantage of absolute cleanliness. Some excellent specimens of joinery are on view, notably some fine mantels and panelling.

On stand No. 184, Row J, MESSRS. SAMUEL ELLIOTT & SONS (READING), LTD., of Reading, have an excellent display of woodwork and fittings. The front of the stand represents antique treated half-timber work in English oak, and there is an oak panelled room with mantelpiece and doorway, and with oak ceiling beams, at one end. The centre portion has a fine display of quartered veneered mahogany panelling from work in hand. The other end of the stand is occupied by the well-known "Anti-Cyclone" combination revolving door, which opens as a pair of swing doors or as a revolving door. There are also exhibits of photographs of work done, parquet flooring, and specimens of high-class mouldings.

The exhibit of the BATH CABINET MAKERS' CO., LTD., of Bath (stand No. 106, Row F), shows a portion of an oak-panelled room in the late seventeenth-century style, with a mantelpiece enriched with carvings executed in limewoods. Within the room are displayed samples of furniture in various styles, some of the chairs and stools being covered in needlework and embroidery executed by the company. The electric fittings and other appointments are also executed by the company, some of them being of carved wood, polished and coloured, and covered in needlework. Wood panelling in various woods, tapestry, and wood chimneypieces are also shown.

MESSRS. BOULTON & PAUL, LTD., Norwich, display, at Stand No. 179, Row J, joinery, doors in hard and soft woods, windows and overmantels, dressers and office furniture, and the "Chaine Helice" patent water elevator.

MESSRS. BURT, BOULTON & HAYWOOD, LTD., the well-known timber merchants, sawyers, creosoters, and chemical manufacturers, have an interesting exhibit on Gallery Stand, 23, Row B. They show samples of paving blocks cut from pitch pine, Oregon pine, and Baltic redwood, clean and creosoted, together with mouldings, and pitch pine flooring and decking. They exhibit cable casings, and samples of fencing, both creosoted and treated with their "Silvertown" wood preservative. They have an interesting feature in the shape of a section of a timber fence which was creosoted and erected by the company in 1854, and which was removed on February 21, 1922, in good condition. A complete model of a creosoting plant is exhibited, which shows the general arrangement and construction of a typical creosoting plant.

MESSRS. BRYCE, WHITE & CO. (28, Wharf-road, City-road, N. 1) have a comprehensive display of building joinery on Stand No. 190, Row J. Doors in Western pine, Canadian pine, and hardwood are shown in considerable variety, and suitable for different classes of work. A wide selection of mouldings in deal and Western pine is exhibited, and also some well-designed dressers.

The exhibit of MESSRS. BUSS & ELSTON, LTD., 2, Northport-street, Hoxton, N.1, shows how with modern machinery and expert designing a real oak panelling can be supplied at a price within reach of any person of moderate means. The stand number is 222, Row L.

"Chespale" chestnut wood and wire fencing is shown on Stand No. 51, Row C, by MESSRS. CARDON & CO., LTD., of Penshurst, Kent. This fencing has been extensively supplied to the War Office, London County Council, and other local authorities for use in housing schemes and other purposes.

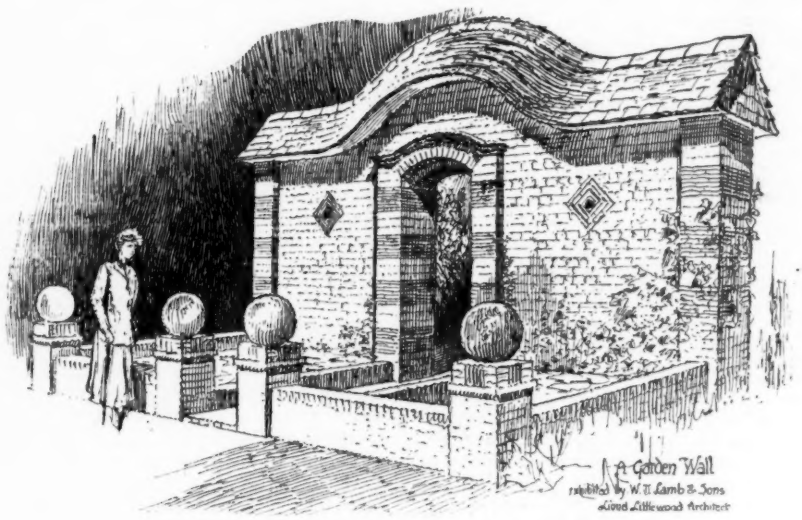
MESSRS. T. B. COLMAN & SONS, LTD. (of Brighton) are, on Stand No. 90, Row E, exhibiting revolving doors, of which they are patentees and manufacturers. Two types of door are to be seen, viz., the ordinary collapsible four-way, and the automatic panic collapsible four-way, and both are erected so that visitors can test their working as though in position as entrances to hotels or offices. With each class of door the main characteristics are that they are perfectly draught-proof and rigid. A new feature in revolving doors is shown in the ordinary collapsible door, whereby the operation for bringing the revolving wings to a central position, to form two passages, is much simplified.

The FERNDEN FENCING CO., LTD., Onslow Bridge Chambers, Guildford, Surrey, are showing at Stand No. 41, Row C, a selection of British oak, larch, chestnut, fir, &c., fencing, for every purpose; oak park paling, a speciality (as recently supplied to the Royal Enclosure, Ascot, All England Lawn Tennis Ground, &c.); palisade, ornamental, post and rail, close boarded, criss-cross, rustic, bullock hurdle and railway fencing, &c. The firm also show gates to their own original and registered designs, and they are the sole manufacturers of the "Fernden" cleft chestnut pale fencing and other types of composite wood and wire fencing in various patterns and heights suitable for all purposes. The Company also occupy Stand 8, Row B, in the Gallery.

An attractive Stand (No. 77A, Row E) is that of MESSRS. J. GLIKSTEN & SON, LTD., of Carpenter's-road, Stratford, London, E., who are showing a well-arranged selection of Austrian wainscot oak, Japanese wainscot oak, American oak, Cuba mahogany, mahogany, whitewood, walnut, teak, French walnut and veneered panels, and timbers specially suitable for building purposes. A noticeable feature is a show stand showing various qualities and kinds of wood.

Built-up plywood in all woods is a speciality of MESSRS. Y. GOLDBERG & SONS, LTD., of Shoreditch, at Stand No. 172, Row J, where some excellent examples are to be seen.

MESSRS. JAMES LATHAM, LTD., 124, Curtain-road, London, E.C.2, and Leeside Wharf, Clapton, E.5, are showing at Stand No. 136, Row G, a pile of Austrian oak, which is a very good sample of bright, clean, seasoned wood, and shows that the pre-war sources for the supply of this prime wainscot are again available. Messrs. Latham are also exhibiting, at Stand No. 139, Row G, a comprehensive collection of woods of commerce which should appeal to architects and builders alike. Both plain and finely figured samples are on view, all the specimens being taken from stock on hand, whilst around the stand is a series of finished panels in fine mahogany, walnut, oak, teak, &c. Mouldings and floorings in oak, teak, maple and other hardwoods of "Mahtal" manufacture are in evidence.



A WELL-DESIGNED STAND. (*See p.* 616.)

Specimens of the excellent products of the LONDON PLYWOOD MANUFACTURING CO., LTD., 384, Old-street, London, E.C.2, are shown on Stand No. 126, Row G.

MESSRS. WM. MALLINSON & SONS, LTD., of 130–8, Hackney-road, E. 2, who specialise in hardwoods, show on Stand No. 204, Row K, samples in many thicknesses of mahogany, walnut, teak, Austrian wainscot oak, American oak, &c. Sample panels are also exhibited of other finely figured woods suitable for high-class interior work. "Mallite" plywood, which is claimed to be absolutely waterproof, and a variety of woods of general utility, such as American whitewood, yellow pine, pitch pine, &c., are also exhibited.

THE NORTH OF ENGLAND SCHOOL FURNISHING CO., LTD., Darlington, exhibit on Stand 171, Row J, "Utod" doors suitable for hospitals, hotels, villas, cottages, &c.; patent windows which provide a simple but effective method of ventilating rooms; and a patent lift-out partition.

A speciality is shown at Stands Nos. 4 and 5, Row A, by MESSRS. WILLIAM OLIVER & SONS, LTD., 120, Bunhill-row, London, E.C. 1, in the way of Austrian wainscot oak boards and planks with both edges squared. Other woods exhibited include English and French walnut, English wainscot oak and sycamore, and samples of Cuba, Honduras and African mahogany.

A notable feature of the exhibit of MESSRS. T. W. PALMER & CO. (Merton Abbey Iron Works, Church-road, Merton Abbey, Surrey) is the "Victoria" cleft chestnut paling, which is made from home-grown timber, the pales being cleft with the grain from hard close-grained sweet chestnut poles. The wires are of best annealed drawn steel, galvanised, four strands to each. The pales are placed as near as possible at the distances apart stated in the tables of prices, the gauging being usually done at the bottom wire. The wires are woven around the pales by improved machinery, and every pale is stapled to one of the wires. The fence is made up in bundles of 10 yards for any height up to 4½ ft., and of 5 yards for heights of 5 ft. and over. The firm are also exhibiting wrought iron fencing and gates, balcony railing, iron fireproof doors, iron staircase, steel roof trusses, stanchions and girders, all classes of joinery, oak paling,

open and close, English oak hand gates, English oak carriage and yard gates, portable buildings, &c.

Located on Stand No. 43, Row C, MESSRS. RIPPERS, LTD. (Castle Hedingham, Essex) are showing a very wide range of goods. Included amongst the interesting exhibits is a new type of hospital door; various hardwood and softwood doors (including several examples of sand-blasted work); elm greywood doors and panelling, and various mantels and decorative mouldings. In the housing and ordinary joinery section is to be seen a patent dresser, a patent revolving cupboard, and step-chair, together with the usual types of housing joinery.

Situated at Stand No. 95, Row E, the exhibit of MESSRS. VENESTA, LTD., 1, Great Tower-street, E.C.3, demonstrates an improved method of covering walls and ceilings in place of lath and plaster. Venesta plywood is a material for panelling and partition work of every description; it can be quickly fixed and is ready for immediate decoration in a variety of styles. Four methods of treating ceilings are shown, from inexpensive to more elaborate designs. Several examples of period panelling in oak are on view; also a full polished panelled dado in mahogany, the upper portion being plain panelling finished in white enamel. The contrast is very effective. Another section shows plain panelling in the white, ready for paint or distemper

MESSRS. JOHN P. WHITE & SONS, LTD., of Bedford, are showing on Stand No. 183, Row J, two types of patent flush doors, namely (1) a teak-faced flush door built up on asbestos cement slabs, especially designed for hospitals and sanatoria; and (2) a flush-faced mahogany door, suitable for hospitals, offices, and other buildings. Many photographs of work carried out in home grown timber, such as English oak and English walnut, in which this firm specialises, are also on view.

Timber, turnery, mouldings and plywood are displayed by the YOUNG FIRM, LTD., of Virginia-road, London, E.2, at Stand No. 129, Row G, and Stand No. 159, Row H.

ROOFING MATERIALS.

Absolute impermeability combined with permanence are necessary qualities of any material used in roofing, for, without them, the interior of a house is liable to be speedily spoilt by leakage. Ceilings will fall and papers peel, paint blister, distemper blow, and, if the roof is not attended to, the house becomes unhealthy and uninhabitable. The provision of a sound roof is of vital interest to everyone in these humid isles, and since old roofs decay, and repairs are dear, many people who would not think of building a whole house will seek information concerning the best method of providing a new roof in place of one that has become too disintegrated to stand any further patching up. A strong prejudice in favour of pitched roofs stands in the way of the universal employment of the flat, which would have an economic reason for existence where space is valuable and land dear.

Roof materials, therefore, are provided to meet the two different requirements, for flats and for slopes, those designed for use on flats having to be more definitely waterproof than the others, since gravitation tends to press the water through the substance and tests every joint very severely.

When the question of appearance is considered the choice of materials is more restricted, for not every waterproof material is a thing of beauty, or desirable in a permanent architectural scheme where tarpaulin and corrugated iron might be considered inadmissible. Beauty, and the wholesome pleasure it affords, is a valuable asset in human life, and where a finer quality of material can be obtained that is of equal strength and impermeable nature, the more beautiful result is well worth the additional cost. Materials suitable for either temporary or permanent roofing works are on view at some of the stalls.

The Stand (No. 60, Row D) of the BRITISH ROOFING CO., LTD., Premier House, 150, Southampton Row, London, W.C. 1, shows the "Alligator" asbestic, corrugated sheeting and flat asbestic slates. The Alligator asbestic slates are supplied in one standard thickness, 11/64 in. Various methods of laying can be adopted, but the one recommended for economy combined with efficiency is the diagonal style with "C" pattern slates 16 in. by 16 in., allowing for an overlap of 3 in., but in particularly exposed or other abnormal positions they can be supplied for either 3½ in. or 4 in. overlap. These tiles can also be supplied in similar "C" pattern, 12 in. by 12 in., 18 in. by 18 in., or 24 in. by 24 in. Special size tiles are also supplied for laying as ordinary slating. All tiles are sent out ready cut and holed, according to the style of roofing and overlap required. The tiles are made in three colours, natural or grey, blue and red. Alligator asbestic tiles can be nailed in the usual way on wooden battens or boards, or can be fixed direct to steel angle irons. Alligator asbestic wall and ceiling sheets are supplied in standard sizes, 8 ft by 4 ft., 6 ft. by 3 ft., 6 ft. by 4 ft., or 4 ft. by 4 ft., in thicknesses from 5/32 in. to 1 in. thick, and various systems are shown of using the walls, partitions, &c., also the decorative effects that can be obtained by the use of these as panelling, &c. A small roof is shown of Alligator asbestic corrugated sheets, which is an excellent roofing for factory construction, being acid and chemical proof, fire and rot-proof. All classes of bitumen roofings, dampcourses, builders' felts, plain tarred and tarred and sanded, &c., can also be seen.

Attention is drawn by MESSRS. D. ANDERSON & SON, LTD. (Roach-road Works, Old Ford, London, E.3, Lagan Felt Works, Belfast, and Park-road Works, Stretford, Manchester), at Stand No. 113, Row F, to all classes of the firm's well-known "Red Hand" brand of roofing, sarking and lining felts, damp courses, also "Rok," "Stoniflex" and "Hippo" roofings. The special exhibits consist of a model "Belfast" lattice girder roof covered with "Rok" roofing. Models are also shown of a concrete roof reinforced with "Rok" roofing, and one illustrating Anderson's system of flat roofing. There is also to be seen a small wooden hut with sloping roof covered with "Hippo" roofing, demonstrating the uses of the latter as a cheap ready roofing for all temporary buildings.

The application of their well-known bituminous products is demonstrated by MESSRS. GEORGE M. CALLENDER & CO., LTD., of 25, Victoria-street, S.W., on Stand No. 65, Row D, by means of models and specimens. The exhibits comprise "Callendrite" sheeting, which is specially recommended for waterproofing lakes, reservoirs, baths, &c.; "Callendrite" dampcourse; "Ledcore" dampcourse, which, as its name implies, has sheet lead as a core; a rust-resisting paint for iron and steel work; a ready roofing, supplied in rolls complete with nails and cement; the high-grade "Bitufelt" roofing; a roofing, sarking, and lining felt; insulating paper for cold storage and general building work; a bituminous filling for pouring into cavity walls; and an asbestic-bitumen cement for the rapid repair of leaky roofs. From these exhibits of roofing material may be selected suitable for a large building or a fowl-house.

The original patentees of asphaltic roofing felt, MESSRS. F. MCNEILL & CO., LTD. (Spencer House, 4, South-place, E.C.2), show in their interesting exhibit at Stand No. 178, Row J, a diverse and comprehensive selection of their roofings and roof lining felts. Here are felts manufactured by this well-known firm, both in the piece and in application on various scale and full-size models, that are suitable for every kind of roof, flat, curved or pitched, and to suit all pockets. There are also roofing felts of the original qualities and textures as supplied to Government departments for nearly a century, and the latest and most up-to-date productions in pure bitumen roofings also sanded felts, tarred felts, smooth surface felts, hair felt sheets, &c. Other manufactures which will interest architects, builders, and users generally are pure bitumen, lead insertion, "M.O.H.," and other dampcourses that comply with the Ministry of Health specification for housing schemes. For sound-deadening, fireproofing, and for the insulation of cold stores, the use of "Slagbestos" is demonstrated. Critical tests show its suitability for thermal insulation. McNeill's patent pipe coverings of hair felt and canvas or "Slagbestos" with canvas backing, are suitable for hot or cold water, and also for steam pipes. The shortage of houses has given rise to insistent demands in the direction of speed and economy in building construction, and the firm's dampcourses combine these qualities. Concrete specialities are also shown by this old-established firm; amongst these we would mention "Spartanite" for waterproofing and "Flintesco" for hardening concrete, &c.

On Stand No. 85, Row E, MESSRS. ROBERTS, ADLARD & CO., of 47, Queen Elizabeth-street, S.E.1, show an excellent range of roofing materials. On the roof of the stand, which takes the form of a summer house, an attractive effect is obtained with the use of hand-made pantiling, and other roofing tiles and slates of various descriptions were exhibited in a practical manner on model roofs.

MESSRS. VULCANITE, LTD. (Blackfriars House, New Bridge-street, London, E.C.4), are exhibiting on Stand No. 93, Row E, a model showing the application of patent Vulcanite roofing to flat roofs of wood construction. The firm are also showing their well-known roofings, "Leatherite," "Pyramid," "Apex," "Rexilite," and the original Vulcanite sanded asphaltes, shown in rolls and on models. Many examples of dampcourse are displayed, including the "Reliance" brand, as a sheet lead, sealed in bitumen, and protected each side with asphalted felt. Also various weights in "Rexilite" and "Bituna" pure bitumen dampcourses. There are also specimens showing the use of "Standard" asphalte as a waterproof filling for cavity walls, as well as "Corkoleum," a damp-proof underlining for carpets and floor cloth, "Vulcanite" carpet felt, and other specialities.

MACHINERY AND PLANT.

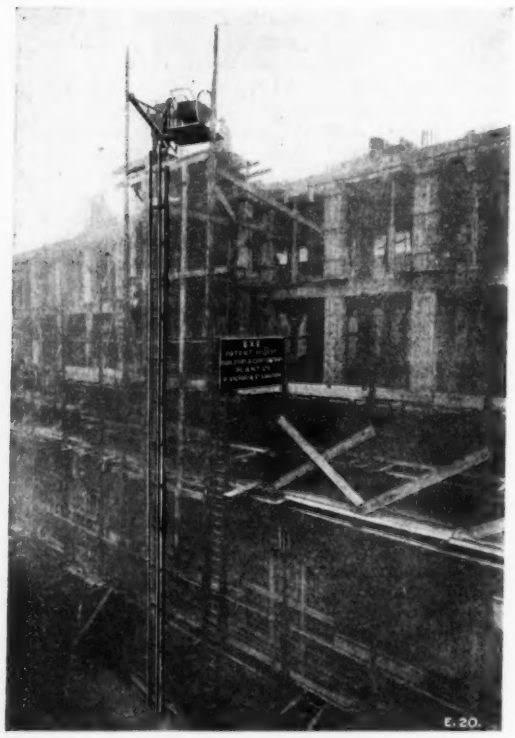
The use of machinery in building work implies that our requirements in respect to the size and character of building materials have attained to something like a settled order, and have crystallised into an equipoise of supply and demand. Before a machine can be constructed it must be possible to say just what kind and quality of material it is to be called upon to deal. An engine cannot drag, nor a crane-jib support, more than a certain clearly-specified load, and tracks and bridges, gantries, tackle, hooks, and the rest are all designed to have strength in definite proportion to this load. By means of slave-power the Romans in Syria proved themselves capable of handling blocks of stone sixty-four feet in length and weighing between four and five hundred tons apiece, a fact which demonstrates the value of collective groups of men in lifting enormous weights. Machinery hardly attempts to rival such works done by multitudes of men acting in unison, and its function is limited to the performance of works of moderate magnitude in a way which is found suitable for reasons affecting economy either in money or time. A great part of the output of machinery is directed towards the handling of small material rather than dealing with great masses. The universal use of concrete in foundations and basement floors (where in England it is enforced by law) has created a demand for crushing and mixing machines of various capacities, and the growing demand for concrete walls, whether of the block or cast *in situ* type, increases the scope of concrete-mixing as well as concrete-shaping machinery. Walls of concrete demand shuttering which is provided in one of two ways; either the wall is built of concrete blocks made in machines and taken out to dry and harden after setting, or the moulding mechanism is applied to the wall itself and is moved along and up as the work proceeds. The first method is akin to brick-

making and shares its advantages, since blocks can be bought from manufacturers who possess facilities for cheap production on a wholesale scale. The second method is the more direct and is, theoretically speaking, a more philosophically appropriate treatment of a plastic material, though whether that will make it any cheaper will depend on considerations of labour and material available on the site. Examples of practically every type of machinery used in modern building construction are to be seen at the Exhibition, from small hand-operated machines to the huge combined concrete mixing and placing plant.

THE AEROGRAPH CO., LTD., 43, Holborn-viaduct, E.C. 1 (Stand 54, Row D).—While specimen work exhibited by this firm demonstrates generally the excellent results obtained by the Aerograph method of painting, a special feature has been made of the application of the apparatus to the production of imitation stone work. Paintwork put on by the Aerograph plant is, while still wet, sprayed with fine sand, special nozzles being supplied for the purpose. The sand particles adhere to the enamel and when dry the surface so treated is a very realistic representation of stone. The stand itself has been treated in this way, and is of distinctive appearance. The walls of the royal and grand staircase corridors and entrance hall of the Theatre Royal, Drury-lane, have been finished to imitate stone by this new method.

The AUSTRALIA CONCRETE MACHINERY & ENGINEERING CO., LTD., 606-7, Salisbury House, London Wall, E.C.2, show in actual operation, on Stand No. 116, Row F, their concrete block-making machine, plain slab-making machine, the Tonkin mixing machine, and the "Speedy" crusher. The latter is a belt-driven machine, designed for crushing clinker, bricks and shingle, and is erected as a complete unit with engine and crusher mounted on a portable stand, or mounted on a stand as a separate unit. The bed plate is one solid casting. All bearings have adjustable phosphor bronze linings.

The BRIGHTSIDE FOUNDRY AND ENGINEERING CO., LTD., of Sheffield and London, are showing, at Stand No. 15, Row B, "Murray's" continuous delivery brick machine, "Pullan & Mann's" special power-driven roofing tile press, the same firm's screw pipe machine, Clayton's horizontal continuous feed "two process" pipe and tile machine, and Clayton's hand-lever portable brick press.



The "Exe" Hoist.
(MESSRS. BUILDERS' AND CONTRACTORS' PLANT, LTD.)

A good selection of contractors' plant is displayed on the stand (No. 124, Row F) of MESSRS. BUILDERS' AND CONTRACTORS' PLANT, LTD., of 15, Victoria-street, S.W.1. These include the "Ama" hand-power concrete block machine, provided with a mechanical spring-regulated tamper which ensures tamping at 100 lb. all over the block. As no pallets are required, a considerable saving is effected with this type of machine. The "Exe" patent hoist, practically a vertical light railway which can be fixed to any scaffolding, steel or brick work, is shown at work, demonstrating the saving in time and labour which may be obtained by up-to-date methods of building construction. The "K.T.H." portable hoist and pouring plant is an evolution of the "Exe" hoist. It consists of a "Z"-shape frame mounted on a platform fitted with rail wheels; on two sides of the frame are mounted "Exe" hoist rails and platforms working on the one-up-and-one-down principle. At the top of the tower is a crane capable of lifting one ton at 10 ft. radius or 10 cwts. at 20 ft. radius. The apparatus is self-contained and self-propelling. The "Zed-Exe" hoist is a self-contained, portable plant, independent of scaffolding, which makes the handling of material on small work an economical working factor. "Fircrete" clips are on view in various sizes. A ¼ cubic yard "Roll" concrete mixer, concrete hand-carts which can be rapidly dismantled and assembled, geared friction winches, "Z" petrol engines for general power purposes, the "Typhoon" power pump, a centrifugal high-capacity pump, and an air compressor are among the other items of interest to builders on this stand.

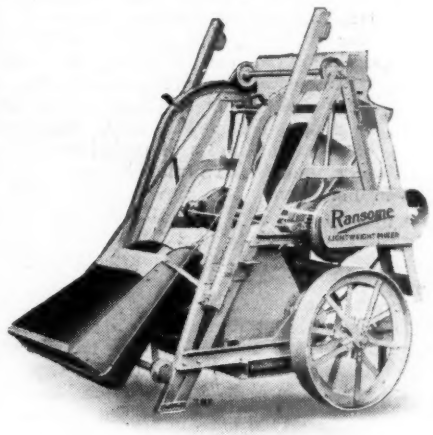
Kennedy's patent bar bending machines, &c., for bending re-inforcement bars up to 1½ in. diameter, cold, are exhibited on Stand No. 49, Row C, by the manufacturer, Mr. W. KENNEDY, Station Works, West Drayton, Middlesex.

Included in the exhibits of Messrs. R. H. KIRK & Co., Newcastle-on-Tyne, on Stand No. 18, Row B, is the "Kirk" block maker, which will make all artificial stone and concrete required in a building from the foundation to the chimneys. On this machine all stonework is made face down, which proves to be very economical with facing material, as well as getting the face, the part exposed to the weather, most dense. There is further to be seen a mechanical tamper, a labour-saving device in that not only is a high production maintained, but a more dense and uniform stone is obtained. Other exhibits include the "Ultra-Rapid" kerb-making machine, and the "Champion" slab and block maker. The firm emphasise that the design and working principle of their machines are without anything likely to require periodical adjustment owing to stretch or alignment.

THE LINER CONCRETE MACHINERY CO., Newcastle-upon-Tyne, are exhibiting the "B" type concrete moulding machine, which is made to produce plain or moulded stone up to 5 ft. long by 13 in. wide, and if necessary to 10 in. deep. All classes of building blocks, slabs, &c., can be made by this machine, and only unskilled labour is required. Machines of this type are supplied to make blocks up to 6 ft. long by 2 ft. wide.

The machinery department of MESSRS. MILLARS' TIMBER & TRADING CO., LTD. (of Pinner's Hall, Great Winchester-street, E.C.2), having found it impossible to obtain a stand sufficiently large to do justice to the wide range of machines which they are now handling, are exhibiting on Gallery Bay No. 5 photographs of a number of typical machines. Descriptive literature is available, and a staff is in attendance to furnish information regarding the machinery. Arrangements have been made by which those interested will be taken by car from Olympia to see any of the machines in operation. These machines include Osgood steam shovels, petrol driven concrete mixers, steam concrete pavers, Cummer asphalte plants, "Tructractors," wagon and bag loaders, portable crusher and bins, petrol-driven diaphragm and centrifugal pumps, Springfield tandem road rollers, electric and petrol driven saw benches, petrol-driven air compressors, spray-painting equipment, petrol-driven hoists, portable cranes and winches, concrete placing plant, barrows, carts, &c.

The RANSOME MACHINERY CO. (1920), LTD. (14–16, Grosvenor-gardens, S.W.1), have large stands on which is shown an extensive range of constructional plant. The ground-floor stand is No. 194, Row K, and the gallery stand is No. 26. A most interesting exhibit is the "Aero" concrete mixer, which embodies a new method of mixing, and practically eliminates the human element in gauging the proportions. This machine was recently illustrated and described in our pages. There are also on view



The Ransome "Lightweight" Tilting-drum Mixer.

a ½ cu. yd. batch-type concrete mixer with belt drive, fixed hopper, and road wheels; a light-weight tilting drum 5 cu. ft. concrete mixer, mounted on two wheels only for easy transport, and self-contained with 3 h.p. petrol engine; a section of a steel concrete hoisting tower with friction hoisting winch, hoist bucket, receiving hopper, and distributing chute attached; a 6 cu. ft. concrete tip-cart; a small portable tar-macadam drier and mixer (6 cu. ft. batch; output per hour, 4 tons); steel sheet piling for cofferdams, reservoir, canal, and marine work; and a 14 in. concrete-pile helmet for lifting, slinging, facilitating driving, and protecting the heads of concrete piles. Messrs. Ransome claim to be the largest manufacturers of this type of plant in Europe.

MESSRS. STOTHERT & PITT, LTD. (Orchard-street, S.W.1) are showing on Stand No. 42, Row C, a selection of their well-known machinery. The largest exhibit is a combined drying, and mixing plant for dealing with tar macadam and bituminous mixtures, in which the stone is dried and mixed in separate drums. A feature of the plant is the method used for dealing with the tar by means of a pump, and no man-handling of the tar is necessary. The plant is supplied mounted on road wheels, and is equally adaptable for depôt or road work. The output ranges from 3 to 4 tons per hour, and larger sizes are manufactured. Three types of mixers are on view: (1) The "Standard No. 1 Victoria" (unmixed batch capacity 14 cub. ft., mixed batch capacity, 10 cub. ft.), fitted with automatic water tank and power-operated side-loader driven by an enclosed petrol engine, the whole machine being mounted on a road wheel truck with swivelling fore carriage. This machine forms a completely self-contained portable unit. (2) The improved "No. 7 Victoria" (unmixed batch capacity, 10½ cub. ft., mixed batch capacity, 7 cub. ft.). This machine is also fitted with automatic water tank and power-operated side-loader, and is mounted on a road wheel truck, but it is driven by an electric motor. The plant is of a light and compact design. (3) "Victoria H.M."

mixer (unmixed batch capacity 4½ cub. ft., mixed batch capacity 3 to 3½ cub. ft.) fitted with power-operated side-loader and driven by an electric motor. This machine is intended as a light-weight mixer, and the careful balancing of the heavy parts of the machine makes it easily portable. This mixer is fitted with two road wheels and two supporting legs. The "Dricrete" block-making machine, which is fitted with an attachment for applying a waterproof face for external walls, and a slab machine for partition slabs for internal use, are also on view.

Located on Stand No. 165, Row H, MESSRS. SUTCLIFFE, SPEAKMAN & CO., LTD., Leigh, Lancs., exhibit the Emperor press, for making lime, sand, and other bricks, a pottery moulding machine and a pug and ball mill for tempering stiff clay.

MESSRS. TORRANCE & SONS, LTD. (Bitton, near Bristol), exhibit on Stand No. 196, Row K, their patent flat-disc "Gyrator" mills, "Torrance" mill, and various mixers.

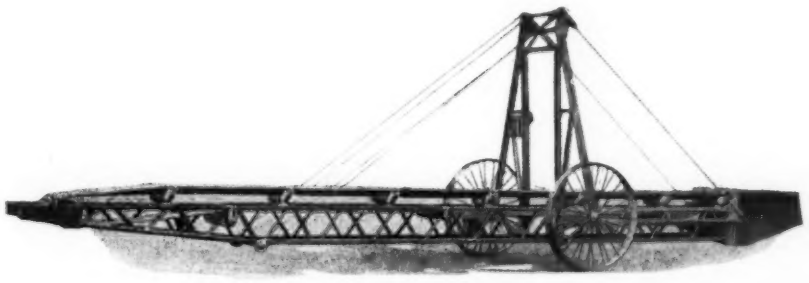
Attention is drawn by MESSRS. TUKE & BELL, LTD., 27, Lincoln's Inn Fields, London, W.C.2, on Stand No. 61, Row D, to their pneumatic ejector with patent valve gear for raising crude sewage, suitable for municipal and other purposes. Base, central column and distributing tank, with alternating tippers and lever, and pawl gear for the "Ideal" revolving distributors, are made for all diameters from 10 ft. to 50 ft. These distributors are positive in action, and, having no preparations liable to choke, will work for weeks without requiring any attention. Central columns for the firm's "Carlton" revolving distributors are made in all sizes for diameters up to 120 ft. The company are also showing a chain pump for sludging sewage tanks, or for use on manure tanks and other purposes; also their Broadway double acting lift and force pump, capable of raising 30 gallon s per minute of sandy or gritty matter.

The firm of MESSRS. R. G. WHITAKER, LTD. (Kingston-on-Thames), are again exhibiting (on Stand No. 120, Row F) their machines for the production of concrete blocks and slabs. The principal machines shown are the "RGW" series of slab and block-making machines, "O," "P," and "U" types; a new mechanical tamper, the firm's latest product; the "R" Type brick machine, and the "Q" Type machine.

In view of the attempts being made to produce concrete with an attractive appearance, an exhibit on the stand of MESSRS. HENRY WILDE, LTD., of 66, Victoria-street, S.W.1 (Stand No. 83, Row E), is of much interest. This exhibit takes the form of specimens of enamelled concrete with an excellent finish. Among a selection of concrete machinery, there are shown a power and hand brick machine, the "Best" hand and power mixer, an interlocking roofing tile machine, a tile machine for making concrete Broseley tiles, a floor tile press for producing mosaic tiles, machines for making ridge and hip tiles, a concrete block and slab making machine, and moulds for making concrete pipes and posts, steps, sills, lintels, copings, &c.

MESSRS. WINGET, LTD. (Westminster, S.W.1), who are launching out in various directions with labour-saving plant for builders and contractors, have many novel features on their stand (No. 127, Row G). Besides the latest types of concrete block machinery, there is a self-loading elevator which will shift thirty tons of loose material an hour at a fraction of the cost of manual labour. In addition to the small portable belt-conveyor a more powerful machine of the same type is shown. Three sizes of these belt-conveyors, one with fixed and the others with adjustable booms, are now supplied by Messrs. Winget, fitted with electric or petrol drive, and capable of loading or unloading up to 70 tons an hour. There are also demonstrations of the "Nonalike" method of concrete block construction, which is attracting so much attention in the Liverpool Corporation's direct labour housing scheme, as well as at Welwyn and elsewhere, and offers a new field for architects in concrete block construction. Attention is also drawn to "Novoid," the concrete proofer, made by the TORBAY & DART PAINT CO., LTD., of 26–28, Billiter-street, E.C. 3, which, added to Portland cement, aggregate and sand, forms lime silicates which are hard and insoluble, producing an impermeable concrete, weather, water and oil proof. "Novoid" is a powder, of approximately the same specific gravity as Portland cement, which increases its strength, hardens its surface, and prolongs its life.

On Stand No. 82, Row E, the BECCO ENGINEERING AND CHEMICAL CO., LTD. (158-160, City-road, E.C.1), are showing two household water-softening and purifying plants, and also one measuring, apportioning, and distributing apparatus from a "Becco Legg" industrial softener. The household water-softeners are manufactured in sizes from 50 to 100,000 gallons per day. The industrial softeners are manufactured in sizes up to 250,000 gallons per hour.



"Winget" Portable Conveyor.

SCAFFOLDING AND LADDERS.

Scaffolding in England differs from scaffolding in countries in the south of Europe in that it is far more substantial and is itself often a building of quite respectable solidity. In southern lands the thick walls of a new structure are used as passages, the labourers carrying baskets of rubble or mortar on their heads as they walk in single file along the upper portions of the green, unfinished masonry. Scaffolding in these cases is reduced to a minimum and consists of posts and ledgers, untriangulated by braces, and only tacked together with wire nails; an arrangement capable of swaying perilously in any wind. The system suits the employment of workmen who walk barefoot with the agility of monkeys or tight-rope performers, but would not be tolerated in this land where custom has established a ponderous character in so many details, and where peril to life and limb is still taken into account. The fine quality of English scaffolding is undoubtedly due to the employment of sailors who have carried into the art the ship-shape traditions of life at sea. The design and construction of the normal braced pole scaffold tied with hemp or wire lashings has proved adequate for its purposes and affords a standard of strength to which improved methods of scaffolding should conform even when they attempt to economise in weight and speed of erection. Many inventions in scaffolding have aimed at making the operations of repointing, painting and such-like minor repairs cheaper by providing a light, portable platform adjustable to different heights on the face of a building. The three methods of loading known to mechanical science, stressing material in compression, tension, and cross stress, have been exploited in the extension ladder, the suspended cradle, and the cantilever or "hanging" scaffold bracketed out from the face of the wall. Convenient as these devices are, and perfectly safe when properly applied, their use is more appreciated by men who are blessed with steady nerves; and scaffolds built up as braced structures from the ground on the model of the old-fashioned pole scaffold have the advantage of appearing obviously safe and therefore inspiring confidence. Tubular scaffolding is also now being extensively used on account of its lightness and ease of handling, and is included among the exhibits

The well-stocked stand (No. 167, Row H) of the ACME PATENT LADDER CO. (Summerley-street, Earlsfield, London, S.W. 18) contains a large assortment of springless telescopic extension ladders with oblong and round rungs, Acme patent scaffold trestles, builders' steps, Acme tower platform ladders, builders' ladders and trestles, folding platform steps, contractors' hand carts, builders' hand carts, ironmongers' hand carts, scavengers' hand carts, navvy barrows, trollies, garden barrows, &c.

MESSRS. CAYLESS BROS. (BATTERSEA), ladder and barrow manufacturers, Battersea Park-road, S.W.8, exhibit an extensive variety of articles of improved pattern that have been made at their works. In the builders' and decorators' section are "C.B.B." patent telescopic ladders, navvy and concrete barrows, ladders of various styles, plain and extending trestles, stout, light or adaptable steps, and patent portable towers for inside decorating. The municipal and surveyors' section contains street orderly barrows, lamp cleaning towers, road barrows, dusting ladders, and hand carts. The stand is Gallery Bay No. 13.

The "Hampton" patent improved ladder cripple, and the "Hampton" patent window sash with special fittings to permit the outside of glass to be cleaned from the inside, are shown by CRIPPLES, LTD., Hampton-street, Brighton, on Stand No. 23, Row B.

A feature of the display of MESSRS. DREW, CLARK & CO. ("Diamond" Patent Ladder and Scaffold Works, Leyton, E. 10) at Stand No. 74, Row D, is their new patent "Rapidrig" sectional scaffold for interior and exterior work. It combines lightness and strength in a remarkable degree, and is undoubtedly a great time-saver; other advantages are that it is strong and safe, easy to erect and dismantle, is economical, and requires only small storage space. The exhibit includes the firm's patent telescopic ladders, steps and trestles. At Stand No. 199, Row K, the company draw attention to builders' and decorators' patent ladders, patent ladder towers, platform steps, and staircase steps with two backs

THE GRIPWELL STAGING CO., 2, Malton-street, Plumstead, S.E., draw attention to their patent steel staging brackets, on Stand No. 216, Row R.

The PATENT RAPID SCAFFOLD TIE CO., LTD. (43, Lansdowne-road, Stockwell, S.W. 8), are represented at Stand No. 68, Row D. Scaffixer appliances are now so well established as scaffold lashings as to need no detailed description. Evidence of their popularity can best be obtained by a glance at the scaffoldings one sees in course of erection anywhere in London. It is of interest to point out that there are buildings in course of erection in London where it is known to the company that Scaffixer lashings are being employed which have been in constant use for about twelve years. At their stand the company show Scaffixer appliances dry galvanised by a patent process which had to be relinquished during the war, but all their appliances are now treated in this way.

The PATENT TUBULAR SCAFFOLDING CO. (200, Upper Kensington-lane, Vauxhall, London) are showing their product at Stall No. 69, Row D, and demonstrating its adaptability to any kind of scaffold erection. The rapidity, adaptability, strength, neatness, and cleanliness of this scaffolding has created a large demand for it throughout Great Britain. The simple way in which it lends itself to every eccentricity of building line and altitude is noteworthy. For internal scaffolds or buildings already erected, where it is important that the existing work or decorations are not to be

interfered with, it is excellent. The patent putlogs shown for use with the scaffolding use only the joints of the brickwork for the fixing, thus eliminating the costly putlog hole. The company is also showing a sample of its crane staging leg in tubular construction.

Mr. H. C. Slingsby, 142, 144 & 146, Old-street, London, E.C. 1, shows a selection of about 60 from the 1,900 varieties of trucks, etc., which he supplies.

Messrs. Smith's Builders' Accessories, Ltd., associated with J. & W. Shale, Wyvil-road, Vauxhall, S.W. 8, and 198, Rhodeswell-road, Limehouse, E. 14, are showing the following specialities at Stand No. 8, Row B:—Patent adaptable ladder cripple; ladder splice, an entirely new invention for splicing the ordinary builders' ladders without cords; new patent sash cord, "Aero" brand; and Hayter's patent casement stays and fasteners.

The exhibit, at Gallery Bay No. 3, of Messrs. Stephens & Carter, Ltd., of Paddington Green, London, is a very comprehensive one, comprising a wide range of builders' ladders, extension ladders, steps, trestles, barrows, wire cords, hemp cords, and builders' plant in general. They are also showing a full size working Spencer's patent travelling cradle, of which they are now the sole proprietors. The particular point of interest in this cradle is that it can travel on a continuous track of any length, round corners, in and out of recesses, or follow irregular frontages with equal facility. In order to do this, no special fittings to the building are necessary, as the cradle is fitted in exactly the same way as the ordinary cradle, with the addition of the special track. This, of course, is a great advantage, inasmuch as a single Spencer's travelling cradle can cover the same amount of work which, in the ordinary way, would require three or four cradles. To mention but a few of the large jobs on which this cradle has been used, or is at the present moment being used, are the following:—H.M. Patent office, Charing Cross Hotel, Berkeley Hotel, British Museum, J. Barker's premises, Haymarket Stores, Messrs. Mansfield's premises, Strand, and Swan & Edgar's, &c.

BRICKS, STONE, ETC.

One of the most attractive exhibits to architects is the garden wall which has been built by Messrs. W. T. Lamb & Sons, of 43, Shoe-lane, E.C. (Stand No. 158, Row H), to show the excellent colour and texture which may be obtained if a right choice of clay is made. This exhibit (see p. 612) owes part of its value to the pleasing proportion and design which are due to the architect, Mr. Lionel Littlewood, who here demonstrates most agreeably the possibilities of garden walls and how a permanent charm may be obtained about our houses and gardens by a little well-placed and carefully designed work. There are no moulded bricks in the wall and the bricks were not selected but taken just as they came from the stacks, and ordinary bricklayers did the work. Even in a building exhibition such a simple bit of garden wall is very attractive, but amongst a good setting of garden surroundings it would have a heightened charm. It is believed that the clay from which these bricks are made is from a bed which was used for the arches at Nonsuch Palace and Hampton Court. At all events, such bricks are now being used in the restoration of Hampton Court, and no doubt bricks from this clay were used in Richmond Park old walls and many of the old buildings in Church-street, Epsom, in Ewell and Merton.

Messrs. Herbert Alexander & Co., Ltd., Charmouth-street, Leeds, show, on Stand No. 218, Row L, one of their "Hercules" brick moulding and pressing machines for the production of bricks from sand, slag, clinker, spent shale, quarry and slate refuse on their sand-lime and concrete processes.

Messrs. Colthurst, Symons & Co., Ltd., Bridgwater, exhibit patent interlocking Roman tiles, &c., at stand No. 185, Row J.

The building erected by Messrs. Eastwoods, Ltd., Belvedere-road, Lambeth, S.E. 1, is wholly constructed of materials of their own manufacture, and is situated on Stand 121, Row F. It has been designed with the object of displaying the appearance of their bricks massed in bulk in actual work

The stand (No. 137, Row G) of Messrs. Stanley Bros., Ltd., Nuneaton, is designed to show the various kinds of bricks made by the firm. There are also sinks, roofing tiles, malt kiln tiles, pipeware, chimney pots, ridges, finials, air bricks, vases and pedestals, red multiplex quarries, &c.

Exhibits of tiles and bricks are to be seen on the stand (No. 211, Row R) of Messrs. Webb Bros., Ltd., Cheltenham

ROAD MATERIALS AND MACHINERY.

It was possibly in reference to road-making that King Solomon mentioned "a time to cast away stones, and a time to gather stones, together," for, as was seen in a famous war film, roads in his country are often mere rivers of loose limestone fragments cast out of the fields by the peasant cultivators and on which a horse stumbles at an average of once in every twenty steps. Needless to say, nobody uses a road who can find an excuse for a reasonable short cut, and it takes a long time for the stones to become consolidated by the passing traffic. Roads in mountain districts much nearer home have sometimes a somewhat similar character, but the consideration of the modern Englishman for his horse's hoofs and his motor-tyres is causing a continual improvement in road-making from the point of view of smoothness and permanence of surface, even where the result falls short in the question of colour and possesses the disadvantage of being somewhat slippery. Dust prevention is another good result of some modern improvements, for the only type of road surface that will stand fast and heavy motor traffic is one in which the small particles of surface metal are bound firmly into the body of the road by some strong and elastic substance. Many new materials have been introduced since the advent of the motor-car, and, with them, new methods of application and machinery to facilitate laying and consolidation which may be inspected on several stalls devoted to the subject.

The exhibits on the stand of the Clee Hill Granite Co., Ltd., Clee Hill, nr. Ludlow, comprise some of the products of the firm's "Clee Hill" quarries and include macadam of various gauges, screenings for binding, tar spraying and all kinds of concrete work, setts of usual standard sizes for paving, and channelling. There are also shown types of the well-known "Rotoplunge" valveless pump, for which this firm holds an agency, including a portable set mounted on trolley for road work, with petrol engine complete. This will pump anything from tar to water, and has a capacity about 1,800 gallons per hour; a "Rotoplunge" hand pump; a "Broadway" hand pump for use with water-carts, and similar duties where a portable pump is necessary. The stand is No. 4, Gallery Row B.

Messrs. A. C. W. Hobman & Co., Ltd., South Bermondsey, S.E. 16, show at Stand No. 11, Gallery Row B, Kentish ragstone, as used for tarpaving and tarmacadam; tarpaving and tarmacadam materials prepared for use; samples of paving after many years' wear; samples of natural rock mastic asphalte, bitumen and grit used therewith, and models showing application of the same; artificial stone steps *in situ* and cast, balustrades and dressings in various colours; and granolithic and metallic paving, *in situ* stables, garages and factory floors.

Included in the exhibits of the Limmer & Trinidad Lake Asphalt Co., Ltd., 34, Victoria-street, Westminster, S.W. 1 (Gallery. Bay No. 16a and Gallery Stand No. 22, Row B), are specimens of mineral rock asphalte, as taken from the Company's freehold mines, Bassin de Seyssel (Haute Savoie), France. Also specimens of mineral rock mastic asphalte (and their application); "Lithocrete" asphalte for factory floors, loading platforms, &c.; Trinidad Lake bitumen, the standard native bitumen, for use in various industrial purposes; "Lithofalt" paving blocks in various thicknesses; Trinidad asphalte-macadam taken from various carriageways; compressible rock asphalt paving taken from various carriageways; "Bitmarin" bituminous specialities, including paints, and damp proofing composition; asphalte in various forms as laid; samples of "Bitma" joint box compounds; and Hutchinson's testing apparatus and instruments for standardising bituminous road materials, &c.

The Oxford Steam Plough Co., Ltd. (Cowley, Oxford), are exhibiting at Gallery Bay No. 18 examples of repairs to rollers, including steel-plated wheels, link motion re-ground, various parts repaired by electric-welding, &c. They also have a display of spare parts for rollers.

The Phœnix Engineering Co., Ltd., Chard, Somerset (Stand No. 9, Gallery Row R), have on view "Phœnix Rapid" patent 1922 pattern tar spraying machines. There are horizontal and vertical types, fitted with jib crane, filling pump, quick-release shafts, &c. The Company further show "Phœnix Rapid" tar, pitch and bitumen boilers and road tarring appliances. The "Floodgate," "Diaphragm" and "Highland" pumps, for lift and force, or lift only, in many sizes and capacities, from 1,000 to 6,000 gallons per hour, worked by hand and power, are seen, and are used for raising sandy or muddy water, sewage, &c.,

"Asphaltmac" is shown and demonstrated by the Premier Bitumen & Asphalte Co., Ltd., Stratford Market, London, E. 15, at Stand No. 19, Gallery Row B.

The stand (No. 153, Row H) of Messrs. Sharp, Jones & Co. (Parkstone, Dorset) again exhibits, side by side, the application of clay and of concrete to the manufacture of drain-pipes. The varied collection of salt-glazed gullies, traps and channels for house-drainage, and the Hassall and Stanford jointed pipes will interest the architect and builder, as will also the concrete inspection chamber and the large-diameter (up to 6 ft.) rock-concrete tubes.

CONSTRUCTION.

Messrs. B. Morton & Sons, 78, Quay-street Deansgate, Manchester, claim the attention of visitors to their patent reinforced brickwork construction, reinforced concrete blocks for roads, and reinforced concrete bagwork construction on Stands No. 122 and 123, Row F.

A new system of building concrete walls *in situ* without wooden shuttering is demonstrated at Stand No. 80, Row E, by the Climbing Steel Shuttering Co., 515, Queen's-road, Sheffield. The patent shuttering consists of light-bolstered galvanised steel plates. Only one row of these is required to build a wall any thickness and any height. The inside and outside shutters are held apart, the thickness of the wall by means of wires which pass through holes pierced in the upper and lower edges of the shutters. When the concrete has been filled in and has stiffened, the lower wires are cut and the plates are turned up from the bottom, the top wires acting as hinges. The plates have a face both sides, so that immediately they are turned up and wired they are ready for the next charge of concrete: and so the plates revolve to the top of the wall.

Messrs. Vickers, Ltd., Vickers House, Broadway, Westminster, S.W. 1, exhibit their portable concrete machinery at Stand No. 128, Row G. The portable concrete brick machine is designed to make concrete building bricks of standard English dimensions. Any thickness up to 4 in. can be obtained, and by a few simple adjustments various types of bricks may be made, such as arch bricks, flooring brick and tiles, without any additional apparatus. It is possible with this machine for a man and a boy to produce 2,000 bricks per day. The portable concrete roofing tile machine is a light, portable and well-built machine for producing concrete roofing tiles of any desired colour, absolutely wind and water proof. This tile is interlocking; consequently only a very small porportion of the surface of the tile is wasted in the overlap,

and no trouble is experienced in fixing. There is also considerable saving in battens, as the spacing of the battens is 13 in. A fair output for this machine is 1,000 tiles per week, involving the labour of one man. The concrete partition slab machine is a portable machine for the manufacture of hollow or solid slabs for partitions, walls or pavings, and may be made with square edges or with tongued and grooved joints. The slabs are made flat and not on edge, thereby allowing the surface of the slab to be finished off as desired, and it is not necessary to tamp in layers, as in the case with slabs made on edge. It is possible to turn out 200 18 in. by 12 in. by 2½ in. slabs per day with one man. The Vickers Hobbs block machine makes hollow, plain and rock-faced blocks of various sizes. The advantage is that the blocks are made face downwards, thereby ensuring an absolutely impervious face and a body which can be made of a cheaper mixture. A colour mill is also exhibited.

Beaver board, exhibited on Stand No. 97, Row E, by the Beaver Board Co., Ltd., 133–136, High Holborn, London, is a pure wood fibre wall-board, taking the place of lath, plaster, wall-paper, &c., in use upon walls, ceilings and partitions in every type of building. It is made in widths of 3 ft. and 4 ft., and lengths of from 8 ft. to 16 ft. The panels are nailed direct to the studding and ceiling joists. They can be finished with paint, distemper, &c., and the joints covered with moulding to complete the panel effect. Beaver board ensures permanent, sanitary and artistic walls and ceilings. It will not crack or disintegrate, is a non-conductor of sound, heat and cold, is unaffected by vibration, and is moisture-proof. Beaver quality roofings are built up on a rag-felt base and thoroughly saturated with pure natural asphalte. "Best-wall" is a gypsum product, supplied in large panels all ready to place in position. It is fireproof and sound-resisting, and an insulator against heat and cold.

A garage to accommodate two cars, with store and space for workshop fitted with bench, comprises the exhibit of the British Everite and Asbestilite Works, Ltd., 29, Peter-street, Manchester, at Stand No. 151, Row H. It has been designed with the object of demonstrating the various uses of "Everite" and "Asbestilite" asbestos-cement products, *i.e.*, "Everite" corrugated sheeting, "Asbestilite" flat building sheets for walls and ceilings, "Everite" and "Asbestilite" roofing slates, tiles, etc., also the firm's latest speciality, "Everite" asbestos-cement rainwater goods.

The Fawcett Construction Co., Ltd., constructional engineers and contractors, 65, Victoria-street, Westminster, S.W. 1 (Stand No. 174, Row J), are patentees and manufacturers of "Mon'lithcrete" steel joists; patentees and proprietors of "The Edwardian" down draught preventing chimney pot, and of Fawcett's tubular flooring which are here exhibited.

A stand built entirely of marble exhibiting the use of varieties of this material in floors, piers, wall linings, fascias and entablatures, is to be seen at Stand No. 84, Row E, occupied by Messrs. Fenning & Co., Ltd., Palace Wharf, Hammersmith, W. 6.

On the list of approved systems of the Ministry of Health, the cellular brick system is demonstrated at Stand No. 45, Row C, by the manufacturers, the Interloc Construction Co., Station Approach, Harrow.

Messrs. J. A. King & Co. ("King" Fireproofing), 181, Queen Victoria-street, London, E.C. (Stand No. 105, Row F) exhibit their concrete partitions, and plaster slab ceilings. "King's" roof slab construction takes the place of roof boarding and rafters and is fire resisting as well as insulating against heat and cold. The firm also display their pugging slabs, made to suit spacing of joists, and their ferro-concrete glazing bar which does not rust, needs no painting and reduces upkeep. "Ferro-glass" (ferro-concrete and glass construction) is constructed with glass prisms having small ferro-concrete beams formed between. It is used for pavement, floor, roof and stallboard lights. "Cristol-glass" is a high relief glass in copper glazing for domes, laylights and vertical glazing.

Samples of Leckhampton lime are shown at the stand (No. 36, Row C) of the Leckhampton Quarries Co., Ltd., Cheltenham. Exhibits of limestone for every purpose, broken and ground, are also to be seen.

Specimens of the Somerset Trading Co.'s tile manufactures, &c., are to be seen on Stand No. 92, Row E.

The exhibit of the Swift Building Co., Ltd. (18, Iddesleigh House, Caxton-street, Westminster, London), at Stand No. 26, Row B, shows, amongst other things, the construction of the "Bretridge" patent roof and various adaptations for special purposes. The outstanding feature of the roof is its solution of the problem of the expansion and contraction of timber.

The Tourba Construction Co., Ltd. (6, Holborn Viabuct, E.C. 1) demonstrate at Stand No. 169, Row J, the Fremen continuous air cavity hollow brick system of speedy and economic temperature insulation wall construction.

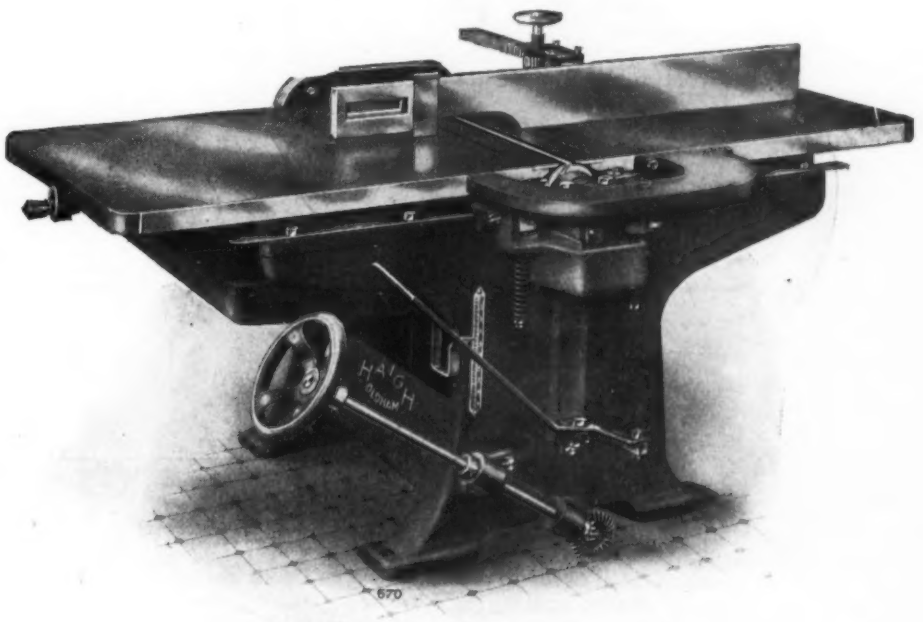
WOODWORKING MACHINERY.

Woodworking machinery is sometimes accused of being a mere concession to the economic conditions of our civilisation in that it may be doubted whether any improvement in the finished carpentry or joinery is obtainable by its use. Economy of production is unquestionably the main object for which woodworking machinery is invented, but certain operations are actually better executed by machine than by hand. The heavy work of converting the green log is done by a power-driven saw more cleanly and expeditiously than by the old-fashioned pit-saw process, and permits the scantlings to be examined for defects, stacked, and seasoned under practically ideal conditions, the speedy completion of the conversion tending to minimise the risk of shrinkage shakes if the material can be suitably housed after being cut. In a similar way, fine veneers that could only be cut by hand with great difficulty and waste are prepared under economical conditions by the use of carefully-selected machine saws or knives. The preliminary surfacing of stuff in the planing machine has not, generally, the same claims to superior quality over handwork, but it obviates an enormous amount of hard labour with results suitable for commercial and practical purposes; moreover, smoothness of finish is largely a question of careful adjustment and sharpening. In joinery the cutting of joints can be performed by machine with an exactness that would tax an experienced hand-worker to imitate; and, in point of time, there is, of course, no comparison, especially for repetition work. Machine hand-tools that have been used for many years in masonry and granite work have recently been adapted for use in carpentry, and bolt holes that would formerly have taken hours of hard labour to bore by means of an auger can now be made in a few seconds by means of an electric drill. The progress that has been made in the development of this type of machinery can be clearly seen on the various stands.

The Ateliers de Construction Ch. Danckaert, of Brussels (Belgium), are showing on Stand No. 201, Row K, a wide range of their woodworking machines. These include a 10 in. by 4 in. five-cutter planing and moulding machine, re-designed in order to embody new labour and time-saving devices; a universal woodworker for surfacing, jointing, thicknessing, moulding, sawing, boring, and mortising wood up to 16 in. by 7 in.; a 31½ in. band sawing machine fitted with a new saw tensioning device allowing the use of blades from three-sixteenths-inch to one-and-three-quarters-inch in width; a 16 in. overhand planing and jointing machine; a double-scribing tenoning machine of heavy design; a 16 in. panel planing and thicknessing machine; a vertical spindle moulder with "lift up" table and adjustable saddle for curved mouldings; a 20 in. circular saw bench with rising table; an automatic saw sharpening machine; and a combined hand grinder for planing and moulding cutters. All these machines are fitted with ball bearings. Mr. J. A. Victor, 77A, Queen Victoria-street, E.C.4, is the sole agent of this company for the United Kingdom.

The exhibits of Mr A. Cooksley, M.I.M.E., 21, 23 and 35, Tabernacle-street, London, E.C.2 (Stand No. 70, Row D), include a new patent chain mortising machine, heavy pattern combination chain and hollow chisel mortiser, extra heavy combined chain and hollow chisel mortiser, new vertical type hollow chisel mortising machine, new type builders' tenoning and scribing machine, new patent tenoning machine, latest heavy type combined surface planing moulding and thicknessing machine (over and under), new telescopic safety guard, one new 12 in. surface planing jointing and moulding machine, new heavy pattern vertical spindle moulder, and new strong pattern rising table saw bench.

The Dominion Machinery Co., Ltd. (Union-street South, Halifax), Stand No. 23A, Row B, are showing in operation three of their special lines, which include the Elliot woodworker, which will rip, cross-cut, surface, bore, tenon,



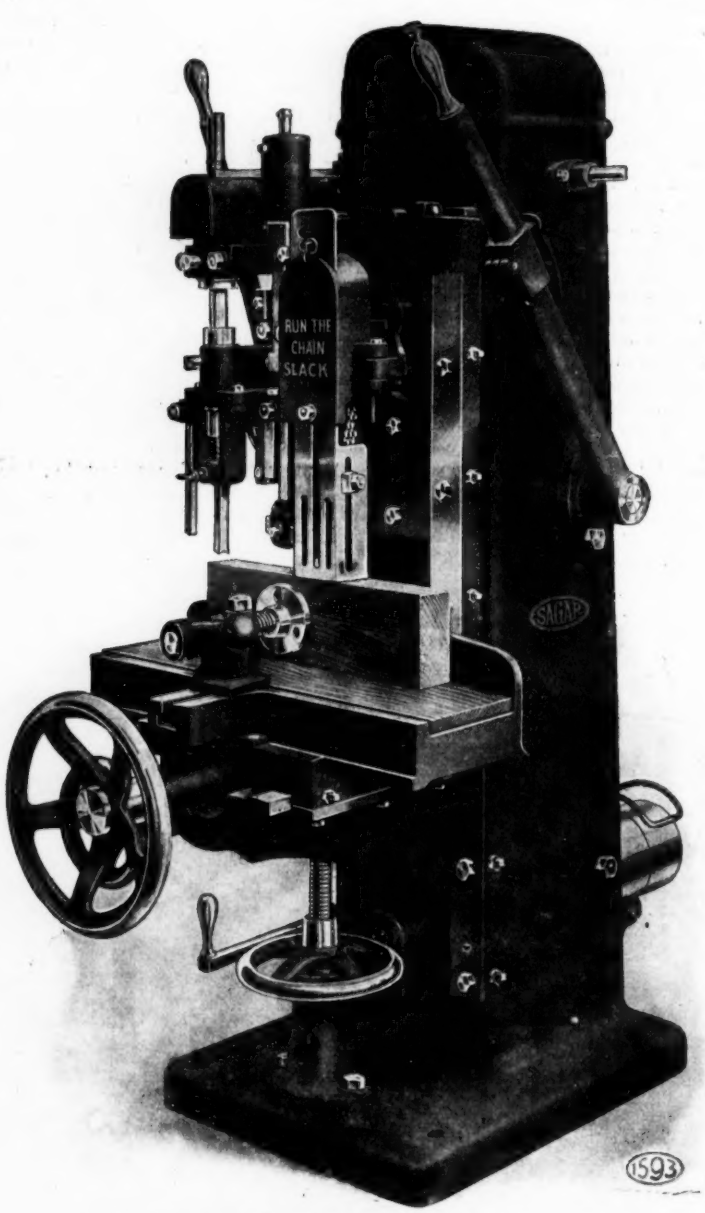
The "ECC" Combined Planer. (*See p.* 618)
[Messrs. Haighs (Oldham), Ltd.]

&c., and is in use in all kinds of trades. The Dominion Serall saw and moulder can also be seen at work, together with the 16 in. by 6 in. thicknesser. These machines are guaranteed to save from 30 to 40 per cent. in labour and power costs.

Messrs. Haighs (Oldham), Ltd., Plane-street, Oldham, are exhibiting (Stand No. 40, Row C) the following machines of their latest pattern, several of which are in motion:—"Ema" tenoning machine with ball bearings throughout; 12 in. "Dob" surface planer and moulding machine with ball bearings; 30 in. "BT" rising table saw bench with ball bearings; "FX" "Haighs" patent automatic stop dovetailing machine; "IS" "Haighs" patent chain mortising machine; "JQ" "Haighs" patent combined chain and hollow chisel mortising machine; "JQA" "Haighs" patent combined chain and hollow chisel mortising machine with ball bearings; "Challenge" hand mortising machine, with boring attachment; "GA" automatic plane iron grinding machine; "DN3" universal woodworker, comprising surface planer, circular saw, mortising and boring, tenoning, &c.; 16 in. "Bua" rising table saw bench, ball bearings; 30 in. ball bearing band saw "CKS" type; "Gem" band saw; 24 in. "ECC" under and over planer; 16 in. "DWB" panel planer with ball bearings; "DF" spindle moulder with roller bearings; and 26 in. "CBA" pendulum cross cut saw, &c.

The Imperial Woodworking Machinery Co., of Wylde Green, Birmingham, are displaying, on Stand No. 161, Row H, a complete range of plant in motion for the joiner, builder, cabinet-maker, and motor-body builder. A new machine shown here for the first time is the "Imperial" hollow chisel mortiser, which will cut mortises up to 1 in. in size. The machine is specially designed with a long stroke and features which are claimed to permit the woodworker to employ a power mortise machine to do heavy work at a price comparable with a hand-mortising machine.

Messrs. J. Sagar & Co., Ltd., of Halifax, have on view on Stand No. 2, Row A, a comprehensive range of their well-known woodworking machines, many of which are shown in operation. Their exhibits include the following:—The "Premier" combined hand and roller-feed planing and thicknessing machine, for rapidly planing out-of-twist, making glue joints, bevelling and chamfering, rebating, tongueing, grooving, moulding, &c; a band sawing machine for sawing straight or curved work required by cabinet makers, engineers' pattern makers, joiners, &c.; a semi-automatic chain-cutter and hollow chisel mortising and boring machine for general mortising in hard or soft woods required in doors, sashes, house or shop fittings; a vertical spindle moulding and shaping machine (electrically-driven) with ball bearings, for moulding and shaping straight or irregular outlines; their latest four-cutter ball-bearing moulding and planing machine for planing, tongueing, grooving, moulding, &c., in hard or soft woods up to 7 ins. wide by 3 ins. thick; a builders' general purpose tenoning machine; a single spindle dimension sawing machine for sawing to accurate dimensions, squaring, mitreing, bevelling, cross-cutting, rebating, cutting obtuse or acute angles; and a heavy double-geared roller-feed planing and thicknessing machine, recently designed for the heaviest and also the finest work in planing and thicknessing, framing, panels, boards, heavy timber, &c., at high speed. As will be seen from this list, practically every type of machine for the shaping of wood is shown here.



Semi-Automatic Chain-Cutter and Hollow-Chisel Mortising and Boring Machine.
[Messrs. J. Sagar & Co., Ltd.]

The exhibit of Messrs. Wadkin & Co (North Evington, Leicester) consists of a selection of their high-speed woodworking machines, all of which are fitted with the latest improvements and safety devices, to conform with the new draft regulations shortly coming into effect for safeguarding woodworking machinery. A number of the machines are running under belt. One machine, which is being shown for the first time, the combined surface planing and thicknessing machine, is designed to meet the demand for a reliable up-to-date machine at a low price. This machine is fitted with safety circular cutter-block running on ball bearings The gears are of steel, machine cut, and are totally enclosed. It will plane timber up to 15 in. wide by 9 in. thick. The pendulum cross-cut saw is a simple and very efficient machine for cross-cutting of all kinds. The saw spindle runs on ball bearings, and will take saws up to 24 in. diameter. The combined surface planing and thicknessing machine is a high-class planer with machine cut steel gearing and safety circular cutterblock running on ball bearings; it is made in two sizes, to take timber 20 in. and 24 in. wide by 9 in. wide. The firm also make a lighter type of combined planer in four sizes to take timber 16 in., 20 in., 24 in. and 30 in. wide. Other machines on view include a vertical spindle moulder chain and hollow chisel mortising machine, chain mortising machine, and recessing, housing, and stair stringing machine. The Stand is No. 198, Row K.

HEATING AND COOKING APPARATUS.

A great deal of sentiment reflects upon the household hearth, but it might be better for all concerned to view it in a more matter-of-fact light as the producer of so many units of heat for warming and cooking if only it could be made efficient and economical of labour and fuel. The ordinary kitchen fire is so costly in both these respects that even during the petrol shortage of 1917–18 a great many householders preferred to burn oil, in spite of the plaintive pleadings of the Government, rather than undergo the anxiety and expense of obtaining and using coal. Country folk who enjoy the right of collecting fallen branches in the woods have to pay high in labour to cut them into pieces small enough to maintain a steady heat on baking day, and only those who have tried it know the tax of continually hacking up fuel, quite apart from the long tramps that are necessary to collect it. Someone has to do the hard and dirty work, and improved stoves will doubtless be invented which will have increased claims to efficiency. The boiler of a locomotive is protected by a layer of non-conducting material, and the same principle is applied to exposed steam pipes, but ordinary-pattern ovens and kitchen ranges are allowed to radiate heat about them in a fashion that is at once wasteful and inconvenient. The hay-box cooker is a clumsy protest against the existing state of things, but what is wanted is a stove that would allow of a similar conservation of heat without the necessity for transferring casseroles with their contents in a violent state of ebullition from a hot-plate to the hay-box, a feat that may be done with impunity by a careful person but which might lead to disaster when left to unskilled labour. Unskilled labour, however, wisely refrains from the attempt. Communal kitchens and central heating may be a partial remedy, but they will only appeal to

a limited proportion of the community, and the installation of pipes for central heating on the chance of their being used is economically unsound. As will be seen on the stands considerable progress has been recently in the design of stoves and ranges for burning anthracite and other smokeless fuels, and also in design, both from the scientific point of view and from the point of view of appearance.

The stand, No. 9, Row B, of the Aerogen Co., Ltd., 30-32, Bolsover-street, London, W. 1, is devoted to a demonstration of the production of Aerogen petrol-air safety gas and of its capabilities when produced. Aerogen gas it is claimed is non-explosive and contains but a small percentage of petrol vapour, air being the chief constituent. The mixture is prepared in exact proportions through the agency of a revolving screwpump which delivers the gas under pressure into the anti-fluctuator and thence to the burners.

Carron Company (Carron, Falkirk) are showing on Stand No. 202 Row F, a selection of their well-known productions, embodying the good workmanship for which this firm is noted. An interior grate, fitted with welded back boiler for hot water supply, is shown in operation. A feature of this grate is the hinged fire-front, forming a pot rest, and the swing trivets. There is also on view "The Carron" range, which has an inner glass oven-door, cast-iron flues, hot closet with glass doors, &c. Amongst the other ranges shown are the "New Beetonette" with high-pressure back boiler, plate rack, &c., the "Cambrian," a well-finished high-class range, and the No. 429 range which is specially designed for housing schemes, and has projecting corners and iron jamb mouldings. A selection of interior and mantel register grates (with and without back boilers), fire dogs, dog grates, pierced steel and engraved hob register grates is on view. Among an attractive series of fireplaces are some fine "period" designs, ranging from Elizabethan to present day, armour-bright grates and wood chimney pieces. Smokeless stoves, gas and electric fires and cookers, porcelain enamelled parallel-sided baths, and a lavatory basin and towel rail complete the exhibit.

Hot-water installations in connection with coal-fired ranges, and suited for baths fixed on the ground floor or on the first floor, form the main exhibit on the stand (No. 223, Row L) of Messrs. Cornes & Haighton. For the supply on the ground floor there is a system with an automatic supply of cold water to the boiler at the back of a range. The second system, the "Wolverhampton," is for the provision of a bath upstairs; in this instance the usual high-pressure cylinder is dispensed with and the circulation of hot and cold water utilised, which is claimed to effect considerable saving over the high-pressure system.

The item which first catches the eye on the stand of the Davis Gas Stove Co., Ltd., 60, Oxford Street, W. 1, in Row H, is the geyser discharging hot water into a bath. The geyser most in evidence is the "Shamrock," which is a cheap pattern which has won for itself a large amount of popularity. Another interesting domestic item is the newest pattern Davis gas cooker (No. 118).

There has been a steady and increasing demand for the newest product of the Eagle Range and Grate Co. (John Wright and Eagle Range, Ltd.), 127, Regent-street, W. (Stand 225, Row L), the Eagle combination grate, which is a neat and useful combination of the ordinary room grate with the cooking range. In addition to this combination, the Company has a comprehensive display of its various ranges.

Messrs. Ewart & Son, Ltd., 346-350, Euston-road, N.W.1, who are on Stand No. 197, Row R, have a fine display of geysers, shower baths, &c. Several of the items are new, the latest being a suggested method of fixing up a geyser with a shower attachment in places where space is a serious consideration. The plan, which is demonstrated on the stand, is to have a geyser fitted up fairly high in a spare corner of one of the rooms. The geyser, of course, has a shower attachment. Immediately under the shower is formed a cement floor with a surrounding curb and a waste pipe. By standing on the cement floor one can enjoy a hot shower. By this arrangement the necessity for a bathroom can be avoided, less water is used, and time is saved, all of which arguments it may be assumed will appeal to housing scheme authorities. Another recent introduction is the "Grafton" combination of bath and geyser, a stand for the latter being securely bolted to the roll of the bath. Interest is aroused by the "Boilo" gas-heated copper, the parts of which are detachable and require no skilled labour to assemble. The spun copper pan is jointless, while a separate lid obviates the use of hinges which may rust and cause trouble. The fact that the pieces can easily be packed in comparatively small compass is an important one. The copper is 29 in. tall by 20 in. diameter and is tinned inside. With a gas consumption of 5 cubic feet per hour the "Eclipse" towel rail should appeal to the housewife on the score of running costs, for the rail not only dries the towels, but brings up the temperature of the bathroom so that the chilly feeling may be avoided by its aid. As last year, the firm are showing the "Industria" water-heater, which has been produced to meet the demand for inexpensive water-heaters for housing schemes where the houses are blessed with a bath and a hot-water service.

Predominant on the stand of the Falkirk Iron Co., Ltd., Falkirk, N.B., are the special patterns of combination grates made by the Company. These include the "Osborne" and the "Compax" and both varieties are self-contained and self-setting. The Stand is No. 16, Row B.

Visitors to the stand (No. 173, Row J) of the International Onepipe Heater, Ltd., 36-38, Victoria-street, S.W. 1, will be struck by the fact that with the firm's production a minimum of structural alteration is required—one merely has to have a cellar or basement wherein to install the heater and to have a hole cut through one floor, whereby the hot air may be discharged into the house.

The Interoven Stove Co., Ltd., 156, Charing Cross-road, W.C.2 (Stand No. 206, Row K), draw attention to the fact that rapid conversion from a cooking stove to a sitting-room grate is the keynote of the "Inter-oven;" just the thing for some of the smaller houses being put up in connection with housing schemes, where it may be a most handy thing for the residents to be able to convert their kitchen into a sitting-room. The Inter-oven has a small coal consumption, but nevertheless manages to get through a large amount of work. The stove is fitted with a large oven which has a capacity for dealing with food for a family of eight or nine persons. There is beneath the fire a hot closet or under-oven which is handy for carrying out certain branches of cooking, and when not thus engaged can warm plates. The boiler fitted to the Inter-oven will supply a tank up to 35 gallons. The Inter-oven is self-setting, all flues being easily constructed on the stove, which merely requires building in. Another special line of this firm is the "Bewty" expanding barless fire-front, by the aid of which the old-fashioned type of sitting and bedroom grates can be made modern and economical and at the same time better to look at. There are several patterns, and it depends to some extent on the pattern of the old grate to which it is to be fitted which is most suitable; for heavy duty the type with the trivet legs is to be recommended. Reverting to the Inter-oven, it may be mentioned that the orders in connection with the Manchester housing scheme run into many hundreds, while at Bristol the total runs into four figures.

The firm of Messrs. Jones & Attwood, Ltd., Titan Works, Stourbridge, is showing at Stand No. 12, Row B, examples of its well-known specialities, the "Domestikatum," "Cultivatum" and "Batheater" apparatus. Two sizes of "Domestikatum" boilers are now made, the ratings being 41 and 54 gallons of water per hour heated from 50 deg. F. to 100 deg. F. In addition to supplying ample quantities of hot water for all purposes these boilers also meet practically every domestic requirement except oven cooking, for which they are not intended. Fuel capacity is such as to permit the fire being banked for 8 to 10 hours, so that the hot-water supply may be kept going day and night. The "Batheater" apparatus is a combined boiler and hot storage cylinder in one unit, and is made in five sizes. Where the primary consideration of an installation is the provision of an abundant supply of hot water with minimum consumption of fuel this plant should certainly be considered. A new and useful tool which is now being shown for the first time on this stand is a pipe cutter for wrought iron pipes. This tool has no cutter wheels, the cutting being done with a small parting tool, the advantage of which is that it leaves no burr on the outside. The parting tool is made of special steel, and is reversible; either end cuts clean through the tube. It is a device which will be much appreciated wherever the cutting of wrought iron pipes has to be done on site.

The odourless gas heater, manufactured by the Lawson Manufacturing Co., Ltd., 323, Caledonian-road, N. 1 (Stand No. 11, Row B), combines utility and economy to a high degree. The secret of its success is claimed to be the achievement of complete and absolute combustion.

Visitors will be cognisant of the advantageous features of the London Warming and Ventilating Co.'s (London) "Kooksjoie" range exhibited on Stand No. 223, Row L. Ranges of various sizes are shown and may be seen in operation.

Mr. Thomas Potterton, Cavendish Works, Ravenswood-road, Balham, S.W.12 (Stand No. 63, Row D) specialises in hot water supply apparatus, heating and allied equipments for all kinds of buildings. Suitable plant for the small house, large mansion, hotel and factory, are represented among his exhibits. Notably the "Victor" gas boilers and a new "Victor" combination boiler are shown. The latter has been specially designed to meet the requirements of private houses where a kitchen range is not installed, and solid fuel is required for winter duty. Coke or other smokeless fuel is used in this combination. A small installation for warming purposes with circulating radiators heated by gas is exhibited as an instance of supplementary heating equipment for residences and offices. It is under automatic control and the controlling factor is not the temperature of the hot water but of the air of the room being warmed. Standard types of sectional boiler, including the "Ideal," for central heating and allied equipment, are included in the exhibits.

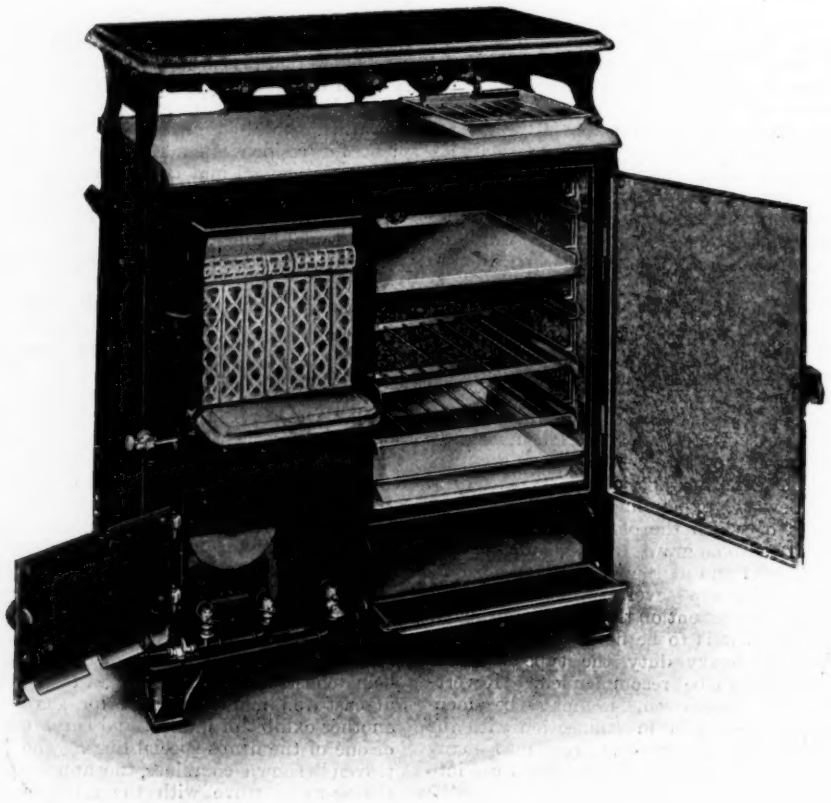
Builders' ironmongery of all sorts aptly indicates the wide range of exhibits shown by Messrs. Rownson, Drew & Clydesdale, Ltd. (London), at Stand No. 160, Row H. Most of the goods are ex-Government stores made available under the firm's five to ten million pounds contract with the disposal authorities. Carpenters' tools figure conspicuously among the exhibits which include also gutters and wrought-iron pipes, stoves and mantels, portable coppers and ranges, gas stoves, and cast-iron baths. An admirably executed fireplace in Queen Anne style is specially noteworthy. It is fitted with all-steel interior concave panels, carved walnut mantel, armour bright curb with companion set of fireirons, and tiled hearth. The hearth is perhaps unique in the exhibition, being constructed of De Morgan tiles. A built-in cast-iron mantle register for gas shown is another exhibit of interest and is representative of one of the firm's special lines. The "Registroven" shown combines the appearance of a sitting-room stove with the advantages of a kitchen range. The whole is constructed of cast-iron, except the oven, which can be removed by simply turning two buttons. All removable parts are interlocking and the use of screws has been avoided as much as possible. A counterbalanced hot-plate is fitted which cannot fall. Other points of this range are easy cleaning of the flues, perfect control of the draught for oven or open fire, oven door is packed, it is easily fitted and built to stand hard wear. The wide range of the exhibits

on this stand is such that every visitor is likely to find something of special interest to himself here.

Attractive and workmanlike are terms which may be truly applied to the Foresight combination range exhibited by MESSRS. SAMUEL SMITH & SONS, LTD., Beehive Foundry, Smethwick, at Stand No. 10, Row B. Inspection reveals an ingenuity in design and soundness in construction which are most commendable. The combination comprises a fall bar fire, oven, recessed hob plate, high pressure boiler and hot closet. It possesses the pleasant characteristics of an open fire when used simply for heating, and the economy of a closed fire for cooking. At all times it provides a plentiful supply of hot water for baths and domestic purposes generally.

One of the most interesting exhibits on the stand of Messrs. SMITH & WELLSTOOD, LTD., of 11, Ludgate-circus, E.C. (Stand No. 219, Row L), is the "Ideal" range, with a fire chamber for burning anthracite, and fire-bars for shaking down the ashes. The whole of the body of the range is enamelled, and the top plate is polished, thus conserving the heat and saving much labour. As the fire is closed, disturbing the fire creates no dust. The firm's new "Hydresse" boiler is on view, and is claimed to give great efficiency with small fuel consumption. The fire is visible through a mica door, and has a very cheerful appearance. This boiler, which has a flat top for cooking purposes, will burn kitchen refuse and will keep alight all night. In addition to these exhibits and the well-known "Esse" stoves, there are samples of cheaper ranges for small property, and portable ranges.

The STIMEX GAS STOVE CO., LTD., Balham-hill, London (Stand 13, Row B), make a special feature of the Stimex A1 gas combination range. This apparatus gives a supply of hot water throughout the house, is fitted with an open fire for heating the kitchen, and further it will do all normal domestic cooking work. It is unquestionably a great advance on the old-fashioned coal range. Hot water is supplied by a self-contained gas-fired circulator. Thermostatic control is provided which ensures maximum economy in gas consumption. The oven is noteworthy on account of the fact that no combustion takes place internally. A separate combustion chamber is provided with a single long burner, and the heated air passes in through a port at the bottom of one side and out of the top



The "Stimex" Gas Stove.

MISCELLANEOUS.

The recent revival of attention to the housewife's side of architecture consequent upon the difficulty of obtaining efficient household help has had its effect in the elaboration of the minor fittings of the home. As long as it was possible to call in a strong arm to aid in sweeping, cleaning, and moving furniture, the necessity for lightness and ease of working was not so apparent; but now that tired people have to do their own housework they welcome any evidence of scientific design in all or any of the appointments which affect their daily labour. The balance of a window sash might have remained for ever the joke Sterne made of it in "Tristran Shandy," had Susan and Trim always been at hand to deal with it. But when one has oneself to struggle to move the sash with mallet and chisel, the proper hanging becomes a matter of distinct and serious importance.

The vacuum cleaner is a distinct advance on the old fashioned dust-raising broom, and is a real economy of labour, in that it involves much less preliminary moving of furniture and subsequent dusting. The fact that the dust is enclosed in a bag and can be emptied straight into the furnace is also an advantage and a step forward in sanitation. Some notable advances have been made in regard to tools and instruments, and English manufacturers at last have learned that they cannot afford to leave it to Switzerland to supply the lighter and popular forms of drawing office requisites.

At Stand No. 56, Row D, the ALBANY FORGE, WAINWRIGHT & WARING, LTD., 45, Goldhawk-road, Shepherd's Bush, W.12, draw attention to artistic metal-work in wrought and cast iron, &c.

The display of the ART METAL EQUIPMENT CO., LTD. (Shaftesbury-avenue, London), at Stand No. 133, Row G, shows how all the necessary fittings for a building can be made in steel. Steelwork protects valuable property from fire, saves 20 per cent. of space over wood, is clean, does not warp or crack, is easily packed for transit being quickly dismountable, can be finished in plain stoved enamel or grained to match any existing wood, or embellished with bronze ornamentation. The material used in construction is of the finest, being hydraulically stretched flattened special steel entirely free from scale and buckle, to which is applied, by a special process, a new elastic stoved enamel which does not chip, scale or scratch. Steel doors and rolling shutters are invaluable for sectionizing buildings to prevent the spread of fire; a steel door always hangs true in its frame and swings easily and correctly. Doors can be constructed either hollow or of solid steel plate, and can be made perfectly plain where necessary, *e.g.*, for hospital use, or ornamented with mouldings for offices, private houses, &c., and if desired can be fitted with glass panels. Other exhibits of the firm include rolling shutters, filing cabinets, library stacks, lockers, cupboards, steel desk, &c.

MESSRS. THOS. ASH & CO., LTD., 3, Berkley-street, Birmingham, who occupy Stand No. 209, Row K, have on view their "Ashanco" patent ventilator, "Scols" pipe and tube bending machines, and oxy-acetylene welding plants and accessories.

At Gallery Bay No. 19, MESSRS. BALDWINS, LTD., 3, St. Helen's-place, Bishopsgate, E.C.3, show painted and galvanised export tanks, galvanised riveted cisterns, hot water tanks, welded cylinders, cattle troughs, corn bins, oil drums, kegs and taper necked cans, galvanised petrol safes, coal bunkers, water cart bodies, galvanised dust bins, wall ties, galvanised corrugated and flat working-up sheets, curved corrugated sheets for concrete flooring, galvanised wrought iron guttering, rain-water piping, ridge capping, &c.

Mr. GEORGE BLAY, New Malden, London, S.W., is specialising at Stand 164, Row H, in steel tents. The tents are unused and all parts are packed in the original bundles. The roofing consists of double sheets of 22 gauge flat steel, strengthened at joints by a lapped corrugation, so constructed as to eliminate any damp which may arise from condensation, and which further acts as a non-conductor keeping the tent cool in the summer and warm in the winter. The system of construction is such that no centre supports are necessary, thus the whole of the interior is quite free from obstruction. The wall sheets are 24 gauge new galvanised iron, securely fixed in double steel slides, bolted both top and bottom to stout steel angles, thus making the structure perfectly wind and weather proof. Ample light and ventilation are provided by two steel windows and a louvre cowl, which with the door is supplied complete with fittings.

Ropes, twines and cords are to be seen at the stands (Nos. 33 and 34, Row C) of MR. GEORGE BRAMSTON, Essex Cordage Works, Stratford, E.15.

THE BRILLIANT SIGN CO.'S stand is No. 155, ROW H, and visitors will find something new in the way of up-to-date signs, letters, &c., especially in regard to brilliant letters, the registered "Permenart" fired-in process background work, illuminated signs of distinct designs, gilt wood letters in all styles, window letters and signs of every variety. There are also cast bronze plates of ornate design, and a special feature is made of large recessed metal letters, now so popular for large illuminated signs.

On the Stand (No. 216A, Row L) of the BRITISH CANADIAN EXPORT CO., LTD. (of Canada), Mr. G. E. W. Crowe, Agent, 83, Pall Mall, London, S.W.1, is displayed a completely equipped kitchen-scullery in 7 ft. square, a total area of 49 sq. ft. The equipment consists of the "Barnet-Easiwork" kitchen dresser, sink, draining board, plate racks, geyser, and "Barnet" refrigerator.

The BRITISH VACUUM CLEANER CO., LTD., Parson's Green-lane, Fulham, S.W.6, display their manufactures on Stand No. 221, Row L.

MESSRS. CAKEBREAD, ROBEY & CO., LTD., Caroba Works, High-road, Wood Green, N.22 (Stands 48 and 205). Two entirely separate stands have been taken by this firm, one a

large stand on which is displayed a wide assortment of general builders' merchandise and the other a smaller stand on which is a varied assortment of drain and tube clearing machines. On the smaller stand are drain-testing plugs, lockfast rods, smoke-testing machine, spring drain cleaner, and so on. In addition there are sweeps' rods of all kinds. On the large stand is a special porcelain lavatory basin which will appeal to the lady visitor; the method of fixing this basin is worthy of note. Instead of the usual brackets or supports a shaped block of fireclay is affixed to the wall; a recess moulded in the back of the basin fits on to this in the manner of a dovetail and very firm grip is thus obtained. A specially large waste-pipe is provided, with a grid sunken so that no metal may be seen. There is also a plentiful display of the firm's usual lines of builders' ironmongery. One may not pass from this stand without mentioning the display of register stoves and chimney-pieces, the former being fitted with self-contained flues and high-pressure boilers, while of the latter are many in enamelled slate with imitation wood colourings; the real wood ones are to be seen in oak, mahogany, walnut, and white-wood. Again, there are kitchen ranges, coppers, baths and bathroom fittings, all of the variety which is in general, not individual, demand.

The exhibit of the Changeable Sign Co., Ltd., Chippenham Works, 182A, Shirland-road, London, W.9, shows a full range of two popular systems of loose letter signs.

The "Discon" Light is the feature of the stand (No. 24, Row B) of Messrs. D. Dickie & Sons, 351, Upper-street, London, N.1. This is a miniature incandescent light, consuming about half a cubic foot per hour.

The "Dreadnought" Fireproof Doors, Ltd. (46, King William-street, London, E.C. 4) draw attention at stand No. 3, Row A, to their fireproof doors, cabinets, and "Protex" roller shutters.

An excellent example of the steel tubular track, known as the "Coburn" system, is to be seen on the stand (No. 3, Row A) of the "Empire Runways," Ltd. (46, King William-street, London). The track is made of the best steel, and the trolley hangers are designed to suit different conditions.

The Four Oaks Spraying Machine Co., Sutton Coldfield, are displaying at Stand No. 28, Row B, all types of "Four Oaks" limewashing, spraying and disinfecting machines for limewashing, distempering or spraying walls or buildings of any description.

"Russell" wallpapers, in exclusive designs and colourings, are exhibited by Messrs. Frawley & Coyle, Ltd., 5, Bloomsbury-street, W.C. 1, at Stand No. 175, Row J.

Of interest to all connected with the building trades are the exhibits on Stand No. 17, Row B, occupied by Messrs. G. A. Harvey & Co. (London). There are on view several patterns of ventilators and chimneys, including the "Exhaust," "Archimedean," "Sutton," "Turbine A.1," "Harco," "Scot," "Shrubbery," "Extractor," "Crest," and "Tobin" Tubes. Zinc and wrought iron gutters and fittings, also heavy mild steel plate gutters are also shown, together with a selection of perforated metals, comprising brass pipes, guards and radiator covers of exclusive design. The firm's steel equipment section is represented by exhibits of steel lockers, steel cupboards and steel shelving, and samples of wire weaving and perforated metals necessary for all screening and sorting. Galvanised dustbins, corrugated cisterns, paint cans, wall ties, mild steel washers, cylinders, cisterns and tanks, including the "Harco" patent manhole cover and weather vanes, are also to be seen.

At Stall No. 21, Row B, Messrs. J. T. Hayter & Co., 28, Victoria-street, Westminster, S.W.1, display stair-rods, patent single screw fitting, casement fittings, door bolts, and the Manley turbine kettle.

Messrs. J. Jackson, Ltd., Bramley, Surrey, exhibit at Stand No. 212, Row K, the patent "Daydawn" washerless, non-leak bibs and ball valves in brass and "Wytallite," non-staining, non-tarnishing metal, which has been tested for stain in acids, sea-water, vegetable, nicotine, and other staining matter, with effect.

Messrs. Jennings, Ltd., Pennywell-road Bristol, are represented at Stand No. 77, Row E. Their exhibit includes a teak shop front, doors, windows and various other specimens of woodwork suitable for dwelling-houses and other types of buildings. Messrs. Jennings specialise in all kinds of joinery and other wood goods, including stairs, mouldings, huts and portable buildings, block flooring, electric light, castings, fencing, turnery, wheelbarrows, &c. They also offer wallboard, plywood, mouldings, asbestos cement sheets and tiles, &c.

Messrs. Kirkwood, Craig & Co., Ltd., adhesive manufacturers, Manor Park, London, E. 12, show at stall No. 20, Row B, "Glood" fluid glue, "Kirkor" tube glue, and "Adwata" paste powder.

Interchangeable "Lock" stencils for builders, architects and surveyors, are shown by Messrs. Marx & Co., 67, Cricklade-avenue, Streatham-hill, S.W.2 (Stand No. 71, Row D).

Messrs. R. Melhuish, Ltd., 50, 51 & 84, Fetter-lane, London, E.C. 4, are, at Stand 28A, Row B, making a special feature of a line of well-made carpenters' and engineers' benches. They are 5 ft. long, fitted with solid beech top, and the remaining part is made of well-seasoned deal, and each bench has two vices. The Company are also making a special display of a new tool, described as a "Maco" template. A pattern of any moulding can be taken, which saves a considerable amount of time to any man taking measurements, and the pattern, after being transferred on a piece of card or paper, can be used again for taking further patterns.

The principal item on the stand (No. 39, Row C) of Messrs. Merryweather & Sons, Ltd., 63, Long-acre, W.C. 2, and Greenwich-road, S.E. 10, London, is the firm's latest fire extinguisher, the "Konus Kemik," in which all the features which experience shows to be the most desirable in such a machine are combined.

Stand No. 193, Row J, shows a roof glazed on the patent system with deal bars of the "Metacon" Patent Glazing Bar Co. (London, W.C.2); also a model of lap and vertical glazing on the "Metacon" patent system for conservatories, greenhouses, verandahs, &c. There is also a model of a north light roof, showing the method of glazing a span with two squares and a centre purlin.

The "Valtor" system of steel springs and girders for floors and automatic locking gear are the main features of the exhibit of Messrs. F. Morton, Junior & Co., 22, Laurence Pountney-lane, London, E.C.4, on Stand No. 191, Row J.

On Stand No. 107, Row F, Messrs. Nettlefold & Sons, Ltd. (54, High Holborn, W.C.1) are showing several of their well-known specialities; in particular they are making a show of their "Bardsley" patent oil door check and spring, of which they are showing a wide range of sizes and finishes. They are also showing doors fitted with their patent ball hinge, which is an application of the principle of ball bearing to the hanging of doors. Messrs. Nettlefold have completed contracts for the supply of fittings for a large number of housing schemes, and samples of patterns as supplied to the D.B.M.S., the L.C.C., and a number of public authorities are shown on their stand. A new tool which will be found useful to builders and joiners is a patent abrasive tape holder, which is shown here for the first time. By an application of the wedge principle, a strip of abrasive tape is held firmly while a fresh strip may be substituted for a worn-out one in a few moments.

A stand of interest to those responsible for the upkeep of machinery is No. 187, Row J, of the W. T. Nicholson & Clipper Co., Ltd. (King-street, Salford). The "Klincha" system of belt lacing shown by this firm enables a joint to be made on a 3-in. belt in one minute. Belts so jointed are flexible and interchangeable, and will run smoothly round small pullies without noise. There are no projections, and only one unskilled man is necessary to make a joint without stopping the machinery. These belt lacing machines are made in three sizes, suitable for heavy, medium and light use. A file and tool handle (the "Python") is also exhibited; this tool has a steel coilspring pressed into the centre, which is secured in its place by a specially-designed ferrule. These take all the pressure when the file is driven into the handle, and the ferrule is so fixed that it cannot be removed without destroying the handle.

A selection of Pagoda cowls, which are manufactured by Pagoda Cowl, Ltd., 17, Kensington Court-place, W. 8, as a cure for down draught, are exhibited on Stand No. 215, Row K.

Exhibits of architectural models suitable for all purposes are shown by Messrs. Partridge's Models, Ltd. (4 & 5, Mason's-avenue, Coleman-street, London, E.C. 2), at Stand No. 32, Row C. The chief exhibits are a half-inch scale model of Trafalgar Mills, Huddersfield. Messrs. Learoyd Bros., Ltd., like many other manufacturers, have found that a model of their extensive works is a very effective, economical and permanent advertising feature for exhibitions, window displays, &c. There is also a half-inch scale model of the *Daily Mai* labour-saving house, which is fitted electrically, so that the roof and first floor are raised and lowered automatically showing the internal planning. This type of model is very popular with the general public, and draws attention to the special features of the design. Models of dwellings of any kind are made so that part or whole of the interior is exposed for inspection. This class of model is valuable in assisting architects to enable their clients to visualise their future homes. The three models on *The Builder* stand were made by this firm.

Messrs. E. Pollard & Co., Ltd., Clerkenwell, E.C.1, storefitters and hardwood joinery experts, occupy Stand No. 150, Row H.

The "Quicksey" Cabinet Manufacturing Co., of 10, Cromwell House, Fullwood-place, High Holborn, W.C.1, display their productions on Stand No. 47, Row C.

It is unnecessary to say that the Rawlplug Co., Ltd. (Gloucester House, Cromwell-road, S.W.7), are the manufacturers of the now well-known patent fibre plug which obviates the difficulties previously encountered in securing a firm fixture in any material. The plug is valuable for fixing any kind of electric, gas or sanitary fittings, wires, cables, brackets, shelves, cupboards, pictures, or anything that can be held by a screw to walls, ceilings, &c., of plaster, brick, concrete, cement, marble, slate, stone, tiles, &c. Rawlplugs require no skilled handling. By their use a fixing can be obtained in one-sixth of the time and cost required by the old method. Rawlplugs are invisible and no damage is done to walls or decorations. A medium-sized screw fixed with a Rawlplug in brick will withstand a direct pull of over half-a-ton

The Reliable Products Co., Ltd. (Percy-street, Pendleton, Manchester), exhibit at Stand No. 73, Row D, their "Tacko" specialities.

Messrs. Rhodes Chains, Ltd. (London), display at Stand No. 182, Row J, their patent cogwheel axle pulleys, and rustproof steel sash chains suitable for good class of work, and heavy sashes of all kinds, especially for shop fronts, lifts, sliding doors, blackboards, &c. The firm also emphasise their light rustproof chain sash lines, suitable for use over existing pulleys.

The possibilities of "Ronuk" wood polish is strikingly demonstrated on Stand No. 109, Row F, by Messrs. "Ronuk," Ltd., of Portslade, Sussex. The whole of the woodwork of this exhibit has been treated by the specially-trained workmen of the Company's Polishing Contract Department, and it is interesting to note the excellent finish that is obtained on the floor, which consists of ordinary deal blocks.

Messrs. Frederick Sage & Co., Ltd., 58-62, Gray's Inn-road, London, W.C.1, are showing a comprehensive display of showcases, unit fittings, and display fittings for drapery, outfitting, confectionery and boot and shoe trades; also electric fittings, including the "Daylight" lamp. The stand is No. 19, Row B.

Plumbers and painters, &c., will be interested in the exhibits of Messrs. S. Smith & Blyth, Ltd., 35, Garratt-lane, Wandsworth, S.W., on Stand No. 221A, Row L. These include mills for putty, paste, and paints, mixers, and paint plants, &c.

The Sturtevant Engineering Co., Ltd., 147, Queen Victoria-street, London, E.C.4 (Stand No. 91, Row E), show amongst other interesting exhibits their turbine vacuum cleaning plants, which are installed in a very considerable number of buildings of various sizes, being laid on in a similar manner to water, gas, and electricity. Not only are the plants suitable for cleaning carpets and upholstery, but they are now being used for effectively and rapidly sweeping bare floors of all kinds, linoleum, walls, plasterwork and such surfaces. This machine has the characteristic that it adjusts itself automatically to give the correct volume and velocity of air at the cleaning tools for cleaning all kinds of surfaces, whether carpeted or uncarpeted. The plants are in use in hotels, restaurants, steamships, large stores, shops, banks, offices, theatres, cinemas, public halls, museums, blocks of flats, residences, churches, workshops, factories, mills, carpet cleaning establishments, &c.

Messrs. John Tann, Ltd., 117, Newgate-street, London, E.C.1, are showing at Stand No. 44, Row C, their specialities in safes, strong rooms, and every branch of security equipment. Strong-room doors, from the comparatively light book-room door for fire risks only to the strongest burglar and fire-resisting bullion vault bankers' door, are the chief exhibits. The thief-resisting doors are equipped with their patent anti-explosive and anti-blowpipe devices. By these unique devices an automatic mechanism comes into operation as a result of any attack on these doors by high explosives, by the oxy-acetylene blow-pipe, or by similar means. This mechanism holds the door secure even if the locks are entirely destroyed by the above means or by a combination of these with other methods of attack. Included in this section of the exhibit are also party-wall doors, plate closet doors, strong-room grilles, ventilators, and also adjustable steel shelving of simple yet rigid construction. Deed boxes, locks, &c., are also shown. The safes exhibited are high grade and include John Tann's patent crane-hinged "Invulnerable" safe. This is an excellent protection against fire and burglars, and is constructed to resist every known risk and form of attack.

Demonstrations of their specialities are given by Messrs. Thomas & Bishop, Ltd., 37, Tabernacle-street, London, E.C.2, at Stand No. 229, Row L. Their products include "Cling-Surface," for belting, "Permac," a rustless jointing material in powder form, mortise locks, furnace cements, and lubricating greases.

Messrs. Tredegars, Ltd., 5–7, Brook-street, W., are represented by a selected and varied display of electric light fittings at their stand, No. 55, Row D, and make a speciality of wood fittings. This firm, for many years, have made a feature of period work, and some fine examples are displayed at their stand. It is claimed that the dignified effect obtainable in wood fittings for electric light, together with the low cost in comparison with metal fittings, and the additional safety obtainable, places the wood fitting in the forefront, without lessening any of its decorative effects. The "Tredegar" rose bowl may also be seen, and is, without doubt, a most pleasing table decoration.

Messrs. Webb & Foulger (Brush Manufacturers), Ltd., 290, 292, and 296, Borough High-street, S E.1 (Stand 72), are actually a combination of three firms — G. T. Gable & Son, Webb & Son, and F Foulger & Co Between them they have been interested in the making of brushes for upwards of 60 years, and that they are expert at the business may be judged from the very large display of all kinds of brushes which may be required by the painter and decorator. All the lines in a way are special, inasmuch as the same high standard of quality and workmanship is to be observed throughout. We noted, however, a cheap line of pure bristle distemper brushes.

Occupying stalls Nos. 30 & 31, Row C, Messrs. J. Wippell & Co., Ltd., Exeter, with Messrs. Gawthorp & Sons, 16, Long-acre, London, W.C. 2, show stained glass, domestic and ecclesiastical; wrought ironwork gates, railings, screens, grilles, signs, casements, door furniture, lighting-fittings; wood-work and carving, panelling, carving for domestic and ecclesiastical purposes, church furnishing; repoussé brass and bronze, facias, stall plates, nameplates, bank grilles; and memorials in stained glass, wood, bronze, alabaster, marble, "Culn," and "Albascript."

NEW ENGINEERING WORKS, LEICESTER.

The design for Messrs. Wadkin & Co.'s new Green-lane Works, Leicester, has been prepared with the object of providing the most up-to-date and adequate accommodation possible in all the varied departments of the woodworking machinery engineering industry. The general layout occupies an open site eight acres in extent, within half-a-mile of the M.R. and G.N. stations and close to the Corporation electric cars—factors answerable for the proprietors' choice of position, both for the convenience of the work people and also the receipt and delivery of goods.

The plan includes an extensive administrative block of two floors, built of 2 in. purple facing-bricks in cement, with Portland stone entrance and dressings. A 20 ft. span reinforced concrete bridge connects these offices with the second floor of the stores, which is a commodious building of brickwork in cement and reinforced concrete and adjoins the main works, a building designed in six bays (150 ft. long × 32 ft. wide), covered with an even span roof of slate and patent glazing, and each bay fitted with travelling electric crane. A central feature is the works manager's office, from which a complete view of the whole of the works is obtained. The main flooring is of wood block. The usual lavatory block, electricity department, boiler house &c., are planned on the whole of the west side, leaving the north and east boundaries available for future extensions.

The central heating arrangements are designed on the accelerated low pressure hot-water system which, for this class of building, where long runs of mains are inevitable, is considered by the leading authorities on heating to be the most efficient and economical for this country. The detached block shown on the illustration is the demonstration room, with canteen adjoining. The latest appliances for safety of work-people are installed, and part of the site is prepared for athletics and caretaker's and foremen's houses. The present buildings form one quarter of the proposed scheme.

The builder is Mr. Walter Potter. The constructional steelwork is by Messrs. Gimson & Co., Ltd., and heating by Messrs. F. H. Rowlett & Son, all of Leicester; and reinforced concrete by Gray's Ferro-Concrete Co., Ltd., of Glasgow and London.

The architect is Mr. W. R. Burtenshaw Mann, M.S.A., of 22, St. Albans-road, Leicester.

PATENTS.

* APPLICATIONS PUBLISHED.

172,773.—F. W. Bradshaw: Reinforced-concrete girders or beams.

172,774.—E. W. Brown: Desks, tables, and the like for housing typewriters and smilar machines.

172,778.—R. A. Inglis: Reinforced concrete constructions.

172,786.—W. Ofield, R. E. Meehan and A. J. H. Ladd: Device for securing in position sash, casement, and the like curtains.

172,793.—G. R. N. Minchin and Pritchett & Gold and Electrical Power Storage Co., Ltd.: Box fastenings.

172,794.—D. Malcolm: Wall ties.

172,800.—T. A. Locan: Building construction.

172,848.—W. N. Haden, C. I. Haden and F. H. Horton: Accelerator for hot-water systems.

163,024.—A. Bonaba: Flushing apparatus particularly for use in connection with water-closets.

172,855.—E. G. Clarke: Machines or moulds for making concrete blocks or slabs for building or paving purposes.

172,883.—W. H. Smith: Mortar templates for use in erecting hollow-block structures.

172,897.—S. Thompson & Co. (Millfields), Ltd., and S. Thompson: Flushing cisterns.

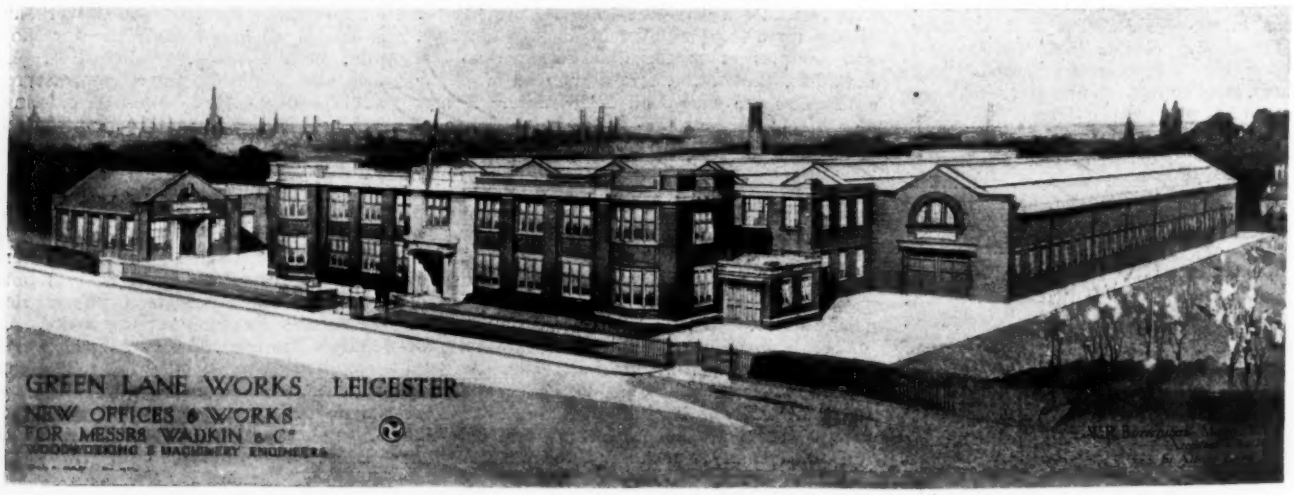
173,002.—W. R. Pailthorpe: Windows.

173,007.—F. S. Sumpter: Hand-presses for use in making concrete blocks and slabs.

173,015.—C. A. H. Brown: Walls for buildings.

173,045.—E. Airey: Concrete slabs or blocks and piers and pillars employed in the construction of walls and buildings.

*All these applications are now in the stage in which opposition to the grant of Patents upon them may be made.



Mr. W. R. Burtenshaw Mann, Architect.

MOTOR WORKS AT WATFORD.

These works, built for the Watford Motor Co., Ltd., and having a floor area of over 15,000 sq. ft., were recently opened as a centre in Watford to deal with repairs to steam wagons, commercial motor vehicles and private cars of every description. The works are capable of dealing with from twenty to twenty-five vehicles at a time. The site available sloped considerably, and advantage was taken of this in planning the fitters' machinery and smiths' bays on the lower floor to obtain natural lighting. The heating chamber is also on this floor.

The ground floor (running in level) comprises the general repair shop, stores, and office, separate lavatory block, and petrol and oil stores.

The first floor includes wheelwrights' shop, coachbuilders' and painting and varnishing shops, and large stores. Vehicles are taken up to this floor by means of an inclined runway and an electric hauling winch.

The lavatory block has been kept separate, and a bay of an existing lorry shed has been adapted for this purpose.

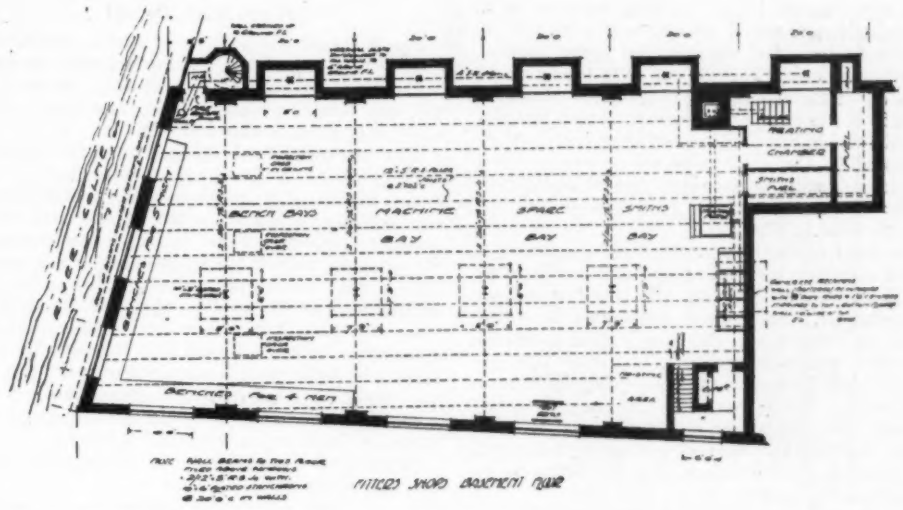
The building is steel framed, and was designed in 20 ft. bays. Main cross girders (2/20 in. by 7½ in.) are carried at these intervals by wall stanchions, and one line of 10 in. by 8 in. rolled steel intermediate stanchions on each floor. The lower stanchions are on grillages. Continuous 12 in. by 5 in. wall beams, top plated, are placed in the wall above the windows on each floor, and these serve also as lintels to the window openings.

The suspended floors are composed of 12 in. by 5 in. rolled steel joists, at 3 ft. 10½ in. intervals with ⅝ in. diameter iron rods at 1 ft. centres as reinforcement for 6 in. concrete and granolithic floors. "Adamite" hardening liquid was mixed with the finishing layer of granolithic to the ground floor. The inspection openings formed in the ground floor are an improvement over the old type of inspection pit. Underslung cages running on the 12 in. by 5 in. ceiling joists are used for engine inspection, and, if necessary, the engines can be lowered by a portable crane through an inspection opening to the fitters' shop below.

The roof is of the north light type, with steel trusses of 40 ft. span at 10 ft. intervals with 7 in. by 2½ in. purlins and covered with "Trafford" asbestos tiles, and specially-made ridge. The north lights are formed of Mellowes patent glazing. As the ground on each side is made up, rain-water drains would have proved expensive, and the whole of the roof water is therefore conveyed along 12 in. by 9 in. wrot-iron troughs, fixed to the walls at high level, and finally discharges into the stream at end of building.

The general contractor was Mr. Henry Brown, of Watford, and the specialist firms engaged on the building were: Steelwork, Messrs Dorman, Long & Co., Ltd., London; roof glazing, Messrs. Mellowes, London; heating (low-pressure hot-water), Messrs. Rogers & Gowlett, Ltd., Watford; fire-escape staircases, Messrs. Haywards Bros., Ltd., London; steel casements, Messrs. Helliwell & Co., Ltd.; the electric lighting and power work, and also the machine erection, was executed by the Watford Motor Co.'s own staff.

Mr. S. E. Keightley-Gomme, M.S.A., of Watford, was responsible for the planning and general supervision of the works.



Motor Workshops at Watford. Mr. S. E. Keightley-Gomme, M.S.A., Architect.

ELECTRIC LIFT EQUIPMENT FOR MODERN BUILDINGS.—III.

BY RONALD GRIERSON, A.M.I.E.E., A.M.I.Mech.E.

COUNTERWEIGHTS, ROPES, ROPE FASTENINGS, CAR AND COUNTERWEIGHT CONNECTIONS, SHAFTS & SHAFT DETAILS.

(*Concluded from p. 574.*)

Rope Fastenings and Car and Counterweight Connections.

Several different methods are utilised, but a description of the designs commonly in use should suffice.

A type adopted by one firm consists of a wrought-iron shackle, which carries two lugs. The cable is passed through the upper portion intact, the hemp core is cut out, the ends of each wire formed into a loop, and the end drawn back into the cup of the shackle. Hot Babbit-metal, which has a low melting point, is then poured into the cup, flows into every crevice, and forms a solid bulb-shaped end which cannot, under any circumstances, pull through the bell mouth (see A, Fig. 20).

Another method consists of forming tapered cored slots in a casting, through which the ends of the ropes are reeved. A loose, cast-iron, pear-shaped, heart piece is slipped into the noose so formed, and the rope is then pulled up into the wedge-shaped slot. By this arrangement it will be seen that the greater the tension on the rope the tighter is the grip obtained, but should the weight be removed there is some little risk of the wedge becoming dislodged. To provide for this, screw clips are fitted as an additional safeguard (see D, Fig. 20).

A simple arrangement, chiefly used for car-lifting connections, which consists of a steel thimble, is shown at B, Fig. 20. This is similar to type A, but the lugs are omitted, the thimble being held in conical holes formed in heavy cast-iron lifting plates.

On high-speed traction-type elevators, two additional requirements have to be met.

(*a*) There is frequently a rotative movement on the part of the cable as it enters or leaves the groove of the Vee sheave, which is the result of the twist or lay of the rope. This is an undesirable feature, as it has the effect of lengthening and shortening the rope as it untwists and twists; and if not provided for would result in unequal loading of the ropes.

(*b*) High speeds and smooth acceleration and retardation are requirements which are somewhat opposed to each other and, with solid connections between the car, ropes and counterweight, smooth, easy stops, free from shock and jar, would be somewhat difficult to obtain.

Both these requirements are provided for by the latest type of spring-loaded draw-bar, which is fitted with ball bearings that permit the draw-bars to revolve freely, and thereby to adjust themselves to any twist the cable may acquire (see Fig. 1). The shock attendant on stopping and starting is greatly reduced by the springs. The operation of these ball-bearing draw-bars has been repeatedly observed by the writer on American lifts, and is certainly no mere talking point.

Another method of equalising the stress on the ropes, frequently adopted by English makers, is to utilise the butterfly action of simple levers, as shown in Fig. 22.

Shafts and Shaft Details.

The enclosed vertical space, within which the lift car is arranged to run, is variously termed the shaft, hoistway, well, well-hole, hatchway, &c., the former probably being the term most commonly used in this country.

The primitive form of shaft consists merely of trap-doors or hatchways, formed in the various floors of a warehouse, vertically above one another, a chain or bar being used as a guard to prevent people falling down through the opening, should the trap-doors be left open. Later, the enclosures round the hatchways in the various floors were made of wood, and were only installed as a matter of convenience or comfort, as it was found that in cold weather, especially with doors open on the lower floors, the hatchways created a draft of air which caused much discomfort and also assisted to spread a fire when an outbreak occurred.

When passenger lifts were first installed, and, at the present time, when it is anticipated that one car will meet the traffic requirements, lifts are frequently located in the well formed in the centre of the open-newel type of staircase. In modern office and similar buildings where two or more passenger lifts are required, they are preferably grouped at or near the main entrance, and it is then standard practice completely to enclose them in a shaft of fireproof construction extending from the lowest landing right up to and through the roof.

Enclosed lift shaft construction may be very conveniently divided into two classes, *i.e.*, (*a*) wood floor buildings, and (*b*) steel-frame or reinforced concrete buildings.

In wood floor buildings the shaft is practically a brick tube set on end, either in the interior of the building or just outside the wall, with doorways and entrances on each floor. When the fire risk must, of necessity, be minimised, the tube must be continuous from floor to roof, must be self-supporting, and must be built entirely within the hatchways formed in the various floors, *i.e.*, no joists may protrude through the walls of the shaft but they may enter into and rest on it. If the shaft be formed of slabs, then, of course, the hatchways must be trimmed in a manner such that they are self-supporting. In both cases the hatchways in the floors must be made large enough to admit the brick or slab walls, and still leave the internal dimensions of the shaft of the size required.

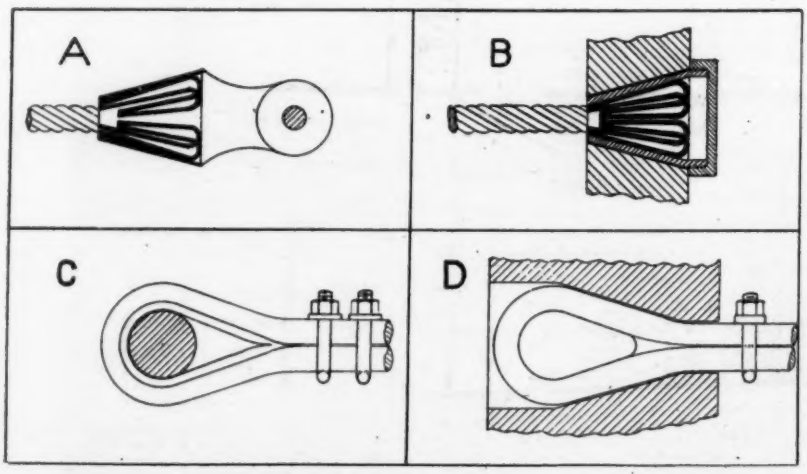


FIG. 20.—DETAILS OF ROPE FASTENINGS.

When the floor construction is of a fireproof character there is no longer any need to carry the weight of the enclosure from the basement.

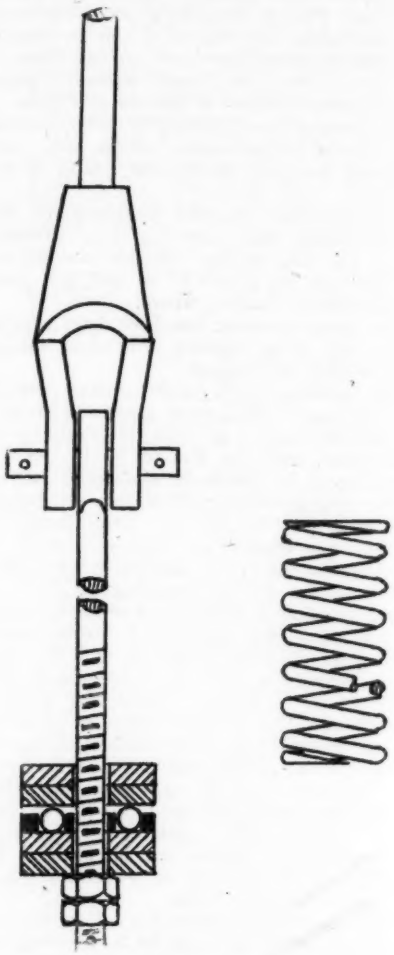


FIG. 21.—SPRING-LOADED BALL-BEARING DRAW-BAR.

All that is actually necessary is to form partitions on each floor, from floor to ceiling, either in brick, slab, or expanded metal and plaster, care being exercised to cover all exposed steel-work with plaster, concrete, &c., as required by the local by-laws.

Should it be decided to install the lift in the well of an open-newel type of stair the enclosure is most frequently formed of ornamental wrought-iron grill or scroll-work or wire screens, which should be carried to a height of 7 ft., with an apron of the same material extending to the ceiling, opposite the door in the car (see Fig. 23).

The restrictions as to size of mesh or spaces discussed in detail in connection with cars apply almost with equal force to wrought-iron grill enclosures, the maximum space allowable being 1½ in. between any two members except when straight bars are used, not filled with scroll, in which case the space should be reduced to 1 in.

Preferably, if at all possible, for staircase shafts it is desirable to arrange for the counterweight to run in a separate pocket formed in the outer walls of the staircase, as it cannot be considered a thing of beauty, nor can it be effectively camouflaged.

Over-travel spaces at both the top and the bottom of the shaft are essential, as the brake is subject to wear and cannot be relied upon for accurate floor levelling, especially with high-speed traction machines.

The depth of the pit or sump, *i.e.*, the over-travel at the bottom of the shaft, should be

3 ft. 6 in., measured from the lowest landing. For higher speeds the space must be increased to 4 ft. 6 in., and for traction-drive express lifts 7 ft. 6 in. may be required. The writer had this point forcibly brought home to him on a recent transatlantic trip, when, owing to the exigencies of space on the ship, every down trip finished in a most unpleasant bump, due to the fact that the over-travel space was limited to a few inches. As an additional precaution against jar or shock, should the brake slip, spring or oil buffers are used under the car and also under the counterweight. The cost of a spring-loaded set, of a simple character, is small, and the installation is strongly recommended.

A clear space of 3 ft. is usually the minimum required between the top of the crosshead of the car and the underside of the shaft ceiling when the car is at its top landing. For speeds above 350 ft. per minute, 5 ft. is regarded as the minimum space.

All footings for columns and for foundations adjoining lift shafts should be carried below the pit in order to ensure that all sides of the pit are true and plumb with the finished sides of the shaft. Similarly, off-sets on the inner sides of the shaft walls should be avoided wherever possible, since the working forces of both the car and counter-balance weight guide rails must be truly vertical, and any inaccuracy in the builders' work will involve considerable additional expenditure for erection of the lifts.

It is, of course, obvious that where the pits are near the water level or where there are underground springs, waterproofed pits are very necessary. A good layer of concrete is also required over the waterproofing to allow for rag bolts or other guide and buffer fixings, to avoid any risk of the lift erectors penetrating the waterproofing layer.

When the lift shaft is framed in steel, the greatest care must be exercised in preparing the special drawings in connection with the lifts, to show details of the amount of fire-proofing required outside the flanges of beams, on the backs of channels, and on the columns; also the sizes of the beams or channels and the relation of block partitions or walls to the inside of the finished shaft.

The author desires to express his indebtedness to "Elevators," by Mr. J. H. Jallings (of Chicago) for details of development and modern American practice (Figs. 16, 17 and 21); to Messrs. Waygood-Otis, Ltd., for Fig. 18; to the Express Lift Co., Ltd., for Figs. 22 and 23; and to Messrs. Bullivant, Ltd., for Fig. 19

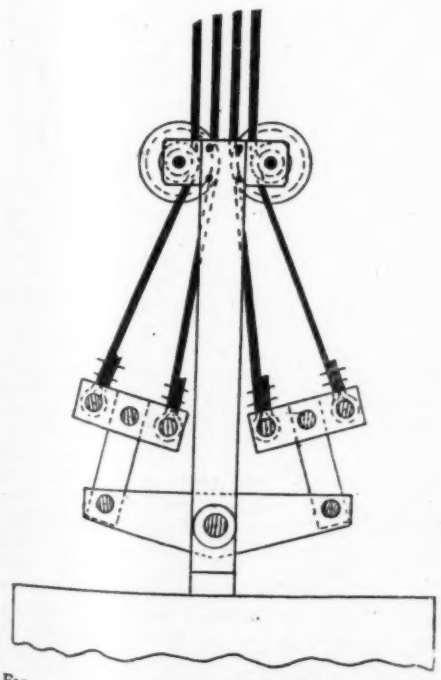


FIG. 22.—LEVER-TYPE ROPE EQUALISER.

BOOKS.

Painting Troubles and Their Remedy. By ANDREW MILLAR. London: The Trade Papers Publishing Co., Ltd. Price 4s. net.

This little book, as is indicated by its title, consists of a series of recipes for painting in various media upon different substances. The matter is prepared in a way designed to help the practical painter and decorator to produce what may be accepted as results of good commercial quality, and does not pretend to teach the artistic side of colour decoration or to meddle with the perilous question of taste. The author in this handbook crystallises the results of his 40 years' experience as an apprentice, craftsman, manager, and employer in the painting trade. He writes feelingly of the difficulties to be encountered and overcome, and in these pages the reader can glean the results of his travels in the U.S.A., Portugal, France, Belgium, Germany, Denmark, and Sweden. In connection with painting on aluminium, it is interesting to compare the practical suggestions given in the handbook with the recommendations in the standard work, "The Chemistry of Paints and Painting," by Sir Arthur H. Church, Professor of Chemistry at the Royal Academy of Arts, London. Professor Church recommends the use of aluminium because even on its unprepared surfaces "it is possible to paint very easily, for the metal possesses a peculiar 'tooth' in relation to the paint so that one can readily lay on successive coats of paint, stroke by stroke. . . . Moreover, when aluminium is exposed to the atmosphere there is formed on the surface a transparent and imperceptible film of oxide which retains oil colours very firmly." Mr. Millar, as a practical man, finds that aluminium, "like zinc or galvanised iron, is very greasy, and requires special preparation before applying paint to it. This may be done by washing all over with benzine, then going over it with fine emery cloth or No. 1½ glasspaper in order to give a key for the paint." Aluminium, as Professor Church foretold, has taken a prominent place as a ground for painting, although not so much for easel pictures as in coach and motor body building, and painters will be interested in the practical hints whereby the breaking up of the paint and powdering of the surface may be avoided. The questions of painting on walls of bricks or cement or plaster surfaces are also dealt with, and hints are given for the treatment of paintwork on resinous woods, on plaster casts, on canvas, and on relief-stamped patent papers. Paper-hanging, sign painting, gilding and silvering, and the fixing of metal letters on glass, are among the hundred-and-two subjects of the different paragraphs.

The Modern Painter and Decorator. Vols. 2 and 3. By ARTHUR SEYMOUR JENNINGS and GUY CADOGAN ROTHERY. London: The Caxton Publishing Co., Ltd. Price 22s. 6d. net each.

A short time ago we reviewed the first volume of this comprehensive work, and now we have the remaining volumes before us we are even more impressed by its magnitude. It will, and we think with every justification, occupy an important place in the libraries of architects, builders, students, and decorators. It is, so far as we know, the first modern attempt to unite the practical, artistic, and historical aspect of decoration, and here we must revoke a criticism that we passed on the first volume regretting the absence of an historical survey; much of the third volume is devoted to this aspect of the subject. Nevertheless, we feel it is in the practical chapters that the greatest value lies. The authors' knowledge of the subject is so extensive that this is, perhaps, but to be expected. An attempt has been made to cover such a vast field, ranging through architecture, ceramics, textiles, and furniture, embracing the work of every age and every country, that the work suffers by reason of its compendious nature. The illustrations in these two volumes

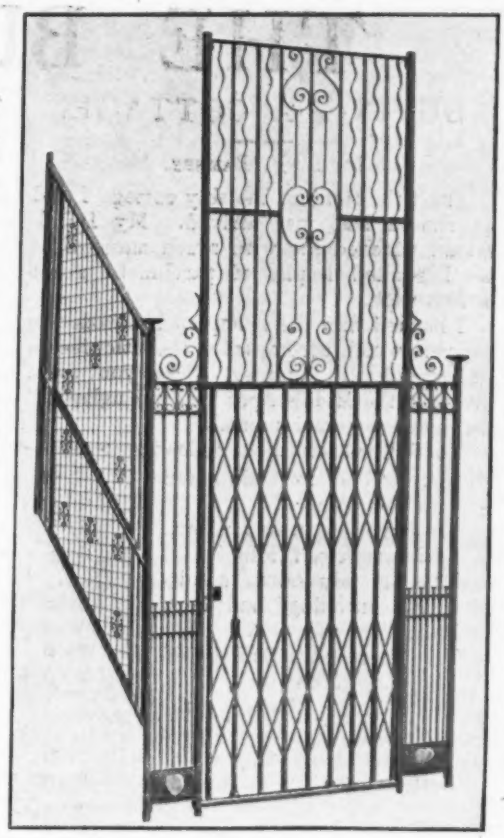


FIG. 23.—WROUGHT-IRON LIFT ENCLOSURE FOR STAIRCASE WELL, SHOWING APRON OVER DOORWAY.

are superior to those in the first; it is, however, to be regretted that the position of many of them in the text bears no relation to the adjacent matter. Plate XXVII, which shows a Louis XVI interior, is placed in volume 2, while the relevant text appears in volume 3. The work would have benefited by the omission rather than by the inclusion of certain of the illustrations. If the chairs shown in Plate XXIX have ever been built the world would be richer by their destruction, and their appearance in a book which will fall into the hands of students, novices, tyros, and craftsmen, whose powers of discrimination are as yet undeveloped, is a source of danger, which it would have been better not to have increased. Many of the examples of modern work are such that emulation would be most undesirable; whereas we can think of many modern bedroom and other interiors, designed by well-known architects, the inclusion of which would have enriched the book. The best aspects of modern furniture and decoration are not included. There is, however, ample compensation for these defects in the purely technical and practical sections which deal with the education of the painter and decorator, with office work, insurance, tools and the method of their use, materials and their mixing, and practical recipes.

Laxton's Builders' Price Book for 1922. (London: Kelly's Directories, Ltd.) Price, 8s. 6d., including postage.

We welcome the new edition of Laxton's "Builders' Price Book" for 1922. We notice that the information contained therein has been brought up to date on the prices ruling at the beginning of 1922, and this must have been a difficult and arduous task, owing to the fluctuations of the markets towards the end of 1921. Since the book was in the hands of the printers prices have fallen, but any variations may be readily arrived at on the basic prices given. The work contains a very complete and useful reference of proprietary articles. This standard work is indispensable to architects, surveyors, builders, and students.

THE BUILDING TRADE.

BUYING A COTTAGE.

By L. F. RAMSEY.

THE title deeds of the tiny cottage I had purchased had just arrived. My Dutch friend watched me with much amusement as I studied a pile of parchment about a foot high.

I handed him the receipted bill from the lawyer, which accompanied the title deeds. He roared with laughter. "Are you, then, living in the Middle Ages here in England?" he asked in amazement.

The bill contained the following items :—

Instructions for admission to the court	£0	6	8
Proclamation on surrender...	0	6	8
Searching court rolls ...	0	6	8
Drawing admission, admitting enrolling, and copy	1	6	8
By attorney	0	6	8
Parchment clerk and bailiff	0	7	0
Respiting fealty	0	4	0
Proceedings before the steward in lieu of a special court	2	2	0
Letters, etc.	0	5	0
	5	11	4
Fine	6	0	0
Heriot	0	0	6
	11	11	10
Professional charges for investigating title and preparing and completing conveyance of freehold and admission	3	3	0
Paid stamp duty	1	10	0
	£16	4	10

All this was for buying a four-room cottage, with an acre of land, and one or two tumbledown outbuildings.

"How long has all this taken?" asked the Dutchman, handing me back the bill.

"It must be six weeks since I agreed to buy the cottage."

"Six weeks!" he echoed. "And are you content to waste time in that way?"

"Well, how long does it take you to buy a house in Holland?" I asked, nettled.

"Just as long as it takes to get a licence for a motor-car or to perform the civil marriage ceremony. Both parties, the buyer and seller, attend at the Public Registration Office and the property is transferred there and then. We have no such things as title deeds, and as for *Heriot* and *Respiting Fealty* ——."

The Public Register of all properties, both land and houses, has been in existence in Holland for hundreds of years. Nearly three hundred years ago, an Englishman, Andrew Yarranton, tried to induce his countrymen to adopt the system. He pointed out the advantage in being able, at any time, without tiresome preliminaries, to turn real estate into ready money.

By the establishment of a Public Register an impetus would be given to trade. Buyers of property would be protected from extortion, because they could at any time visit the register and ascertain what the seller had paid. It seems all too gloriously simple for us to adopt the system!

THE FIXED LAVATORY BASIN AS A TENANT'S FIXTURE.

[*Contributed.*]

THE demand on every hand is for a fixed lavatory basin in every bedroom, and the architect spends a good deal of his time explaining to his clients the rights of landlord and tenant in this matter; but even if the client is prepared to sink his capital he or she is often disappointed with the result obtained. If a white fireclay basin is chosen (and there are several patterns both in fireclay and cast-iron on the market especially intended for bedroom use as against the occasional washing of the hands only, with large shallow bowls and taps well on the sides so placed that they do not knock the forehead or entangle the hair) the objection is made that it strikes a cold and hospital-like note in the bedroom, where cosiness should be the dominant note. If a marble top with suspended fireclay basin is used, although the cost is much heavier, the result is hardly much happier and the attendant pipes are unsightly.

The fitment is a blotch on the harmony of the bedroom suite. It is felt that wood similar to that used in the wardrobe, dressing-table, and bedstead should be introduced and the pipes masked; if this is attempted the cost is heavy and out of proportion to furniture costs produced under workshop conditions, and should the house change hands probably a strange article mars the effect of the new scheme of furnishing. It would appear that there has been a strange lack of initiative on the part of the furniture manufacturer, who, one would have thought, in face of the insistent demand, would have realised that a successor has usurped the washhand-stand and have produced a washhand-stand with a fixed basin and supplies *en suite* with other bedroom furniture. This would appear to be the logical solution of the problem. Only mass production can produce a fitment at a reasonable price, conveniently designed, and standardised to such an extent that if the landlord carcased his house with hot and cold supplies and wastes to each room, as he now almost universally does with gas or electric power to each fire and for cooking, the tenant could fix his own basin and remove it at the end of his term as he now does his gas fire or electric radiator. The result would bring harmony and comfort into the bedroom, and while adding considerably to the landlord's expenses, would by no means burden him to the extent of the fitting with taps, basin, trap, &c., complete. Supplies and wastes could be left with unions temporarily capped off, as gas pipes now are, and for this end wastes would probably be run in 1½ in. tubing or lead, rather than L.C.C. pattern cast iron. The only difference to the analogous gas stove would be the provision of plugged bearers to which the fitment (which must be rigid) could be screwed by the tenant, as the rigidity of the weight of the article could hardly be solely relied upon, as foolish persons might attempt to move it, with disastrous results. Thus, the whole fitting would be removable without damaging the structure, and would comply strictly with the usual interpretation of a tenant fixture, a practice that custom would very shortly confirm, as it has with the similar articles mentioned which bear the same semi-permanent connection with the structure.

Experience proves that with new structures and adaptations of existing buildings such carcasing can be carried out at quite a reasonable expense if taken into consideration in time, and that the extra use of hot water does not tax the capacity of the boiler that is capable of efficiently supplying the sinks and baths of the average dwelling. Just as carcasing for gas, electricity, and water to certain well-defined points is now considered essential to any property, so within a few years we shall probably find this additional carcasing a *sine qua non* and taken into consideration as present or absent in all negotiations affecting property.

THE HOUSING SUBSIDY AND PURCHASERS.

THE case Colbourne and Others *v.* Smith (*The Times*, February 9) is of some importance in connection with the housing subsidy. The plaintiffs were builders who in 1920 were engaged in building a number of houses which would be subsidised under the Housing (Additional Powers) Act, 1919. Plans were submitted to the Borough Council and approved in April, 1920, and the Borough Surveyor issued a certificate for £160 in respect of each house. The plaintiffs had then entered into an agreement with the defendant for the purchase of one of these houses when completed for a sum of £850, but the amount received by way of subsidy was to be taken into account. The completion of the house was fixed for August 31, 1920, but owing to difficulties in procuring labour and materials it was delayed until March, 1921. In 1920 the subsidies had been increased by regulations made by the Ministry of Health, and if this house had been completed within twelve months of the passing of the Act (December 23, 1919) the subsidy would, as increased, have been £240, but as the building had not been completed until fifteen months from that date the subsidy was £180, and this sum had been paid to the builders. Subsequently, however, under a further regulation, the amount deducted had been again allowed and the full subsidy of £240 had been paid.

The present proceedings were by way of summons in which the plaintiffs contended that they were only liable to credit the purchaser with £160 or at most £180, but the purchaser claimed to be credited with the whole sum paid as subsidy, *viz.*, £240. It appears from the report of the case that the agreement between the parties was that the Government subsidy as found by the Borough Surveyor's certificate was to be applied in part payment of the purchase money. The only certificate given was that for £160, but, as we understand the case, the court held that that certificate could not be taken as given for any certain amount, as unless the house were completed in a certain time and the work approved the subsidy was liable to be forfeited or reduced. Thus the court held that the certificate was for an uncertain amount, the maximum at that time being £160, but that it was a sum to be ascertained at a future time so far as the contract was concerned, and at that future time owing to the regulations the sum of £240 had been substituted for the £160 and the purchaser was entitled to be credited with that sum.

The finding of the court in this case has had the effect of handing to the purchaser a sum of £80 which was granted to the builders by the Ministry to represent a proportion of the increased costs of carrying out the building scheme which it was intended to subsidise. The court passed some severe strictures on the policy of the Ministry in varying the grants, but, of course, this result has been brought about by the contract entered into by the builders with their purchasers, and that at least cannot be directly attributed to the action of the Ministry. We fear, however, that many contracts in this form may have been entered into by builders receiving subsidies, and we can only call attention to the case in order that they may not expend further money on unprofitable litigation.

THE ANALYSIS OF BUILDING COSTS.

Mr. T. Sumner Smith, of Manchester, has sent us the following reply to Mr. B. Price Davies:—

Sir,—Mr. B. Price Davies, in his letter which appears in your issue for the 7th instant, has indulged in a few little pleasantries, which I would have passed over had not the points mentioned by him been of importance. In that sense, and in that sense only, shall I deal with them, for otherwise I am afraid they would lead us nowhere, and would be of no interest to your readers. He says it "has been apparent to him for some time that it is my inclination to pose as an authority." Well, if Mr. Price Davies understands myself better than I do, he is welcome to his discovery. To be an authority implies expert knowledge. That is a point of interest. What is an authority or expert? I give the following three definitions:—

(*a*) One who knows something about everything, and everything about something.

(*b*) One who knows what another thinks he knows.

(*c*) One specially qualified by study and practice in any department of science or art.

I do not claim that these cover the whole ground, for they leave out skill in craftsmanship and a host of other things. But they will suffice for the purpose in hand. The first calls forth for a comprehensive knowledge of the subject—for example, quantity surveying—inasmuch as, besides requiring a general knowledge in all matters pertaining to building and engineering and sanitation and pricing, and a general knowledge in law relating to contracts, it demands a complete grasp and understanding in all things relating to the science of quantity surveying. I submit few would pass that test. The second presupposes that the "other" is lacking in knowledge of the subject. There is some justification in certain cases for this, for we may take it that he would not be an expert if the other knew just as much as himself. Two or more may be experts in relation to either a third or more parties; but then it becomes a question of which of the experts is the soundest. In that sense we can have comparative experts of the first, second, or third degree and so on; we may even go so far as to say *the* expert—the rest inferior. The third is more general; hence, anyone qualified by study and practice in quantity surveying would be justly entitled to style himself an expert. Therefore, under this wide interpretation, it would not be presumptuous on my part to style myself an expert.

As Mr. Price Davies, in his own words, has but humble views on quantities surveying, costing, and estimating, it is but natural they will be wide of mine. But what I suspect he means by humble views is probably that he means "limited views." That would apply to most of us. We are all creatures of circumstances, the product of heredity and environment; that is to say, natural aptitudes, and training, and the sphere in which we live and work. Our knowledge is circumscribed. Had Mr. Price Davies or I lived two hundred years ago neither of us would have been a quantity surveyor, for such a thing was unknown then. I will illustrate the point further by borrowing from Mr. Garnett. I am asked by him: "Do I think that recently-erected houses are analogous to those erected in pre-war times, *i.e.*, 12 in. hollow walls with 9 in. walls of the one-time speculative builder?" I feel certain it is only Mr. Garnett's limited knowledge (I speak of this broadly, not disparagingly) that prompted him to ask that question, because there are thousands upon thousands of houses erected all over Lancashire built of 11 in. cavity walls in pre-war days by speculative builders in conformity with by-laws. Again, there are scores of such cottages throughout Lancashire equal to, if not superior to, anything erected in post-war times, with the exception that they are mostly built in rows and have not the amenities or advantages of being built on approved garden city or town-planning lines

I wish it to be clearly understood that I have no desire to attack Mr. Price Davies or anyone else. I had never heard of Mr. Price Davies before the issue of his book; and I have studied his book with profit and pleasure. But the subject of costing is a bigger thing than Mr. Price Davies or I, and perhaps more important too. It is more than twenty years ago that I began the study of this subject, and it is just short of twenty years that I installed my first costing scheme. If I speak as one with some authority, I put that in as a justification of my claim to that title, and especially so since it is only about thirty years ago that costing was first made use of. And it was in this dear old country of ours that it first started, afterwards being developed in America and Germany. The origin of costing is decidedly British, but unfortunately, like many other things that began in this country, we do not see the full importance of them until they have taken root in another country. Despite that, the British costing systems to-day are in general the best in the world. All I have endeavoured to do is to do my little bit to encourage the study of costing in the building trade, with a view to its adoption generally in the interest of the trade. I believe it would be in the interest of the trade were it more widely used, and I speak with some experience. Hence, anything that is likely to retard its use, or when it is misapplied, I pounce upon it. That is my only excuse and my only reason for my criticisms. They are not directed against anyone personally or in particular, and if I have seemed severe I hope I may be forgiven. It has been done with the best of intentions—to avoid a false start or anyone being misled. I do not know that I shall be giving away a secret in saying that when the Housing Department was desirous of instituting a system of costing for housing, it, I believe, investigated several methods, and also applied to myself to know if I were willing to allow them to make use of any of my forms. In the interests of the country, and housing in particular, I readily consented. It so happened, unknown to the Department, that it incorporated in its costing scheme some of my forms that have been in use for nearly twenty years—tried, tested, and proved satisfactory beyond question. I recommend that nine-penny worth, through your medium, to the trade as being a good investment. I should not have mentioned this only that Mr. Price Davies has tried to score off me in a cheap sort of way in his remark: "Have again brought him to the same stage as his costing system and freak quantities . . ." Costing, as I have known it and used it, has now practically attained its majority, and is in a sound, healthy, and sturdy condition. On the other hand, quantity surveying, which has not as yet reached its century, is undergoing the process of doctoring-up. Some day, Mr. Price Davies informs us, it will be superseded by a new standard system. Mr. Price Davies claims that his method will revolutionise estimating. Rather a bold statement that for one who holds but a modest view on the subject.

I wonder how this idea of a new standard system of quantities originated. Did it germinate in the mind of a single individual, or did it occur simultaneously in the minds of many that we needed a new system? Less than a hundred years ago the idea of using quantities must have been a freakish notion. I am not sure to-day in some instances they are not so regarded; certainly if they could be dispensed with, they would. Mr. Davies, or anyone else for that matter, should not disparage nor despise anything that is new because it originated in the mind of a single person. For, if so, then he must condemn electricity and nearly all progressive ideas. Did not the idea of electricity germinate in the mind of Sir Benjamin Franklin, and are we not indebted to Sir Isaac Newton for the discovery of the laws of gravity? What was new yesterday may be old to-day. Perhaps by to-morrow someone will have discovered a method of estimating that will put his revolutionary one in the shade of the past. It does not follow that a thing is not good or right because it is new and runs contrary to your idea. According to Mr. Price Davies, to estimate on quantities you must analyse your materials, reduce each to its component parts, and treat labour separately. I say that quantities may be prepared which give the analysis of materials reduced to their component parts, and labour dealt with separately. What does the difference amount to in the end between these two methods in estimating? The latter means a saving in time on the part of the estimator, and the probable avoidance of mistakes, and should give a more reliable estimate.

Mr. Price Davies accuses me of a ridiculous error and assumption with regard to his second table, so it becomes necessary for me to quote from his paper: "The percentages of 'C' have been worked out on the basis of the highest post-war rates, whilst those of 'D' were worked out from pre-war rates." If that does not mean what it says, then I don't know what it does mean.

I began by a reference to an expert, and I will end by saying that knowledge expertly applied should produce good results, but inexpertly applied may lead to disaster. Mr. Davies supplies us with excellent illustrations on this point: One employer engages a bricklayer to fill in papers, another engages him to lay bricks; clerks without previous knowledge doing costings; and builders, in sheer ignorance, applying figures they did not understand, and whatever the result of that may be, it is to be hoped in their own interest they will not apply figures such as 30 per cent. for cost of labour on a falling market when materials are decreasing in price at a greater ratio in proportion to the decrease in wages. There is a saying: "Every man to his last." And, generally speaking, it would be wise and economical to keep to that.

YEARLY TENANCIES.

The case we noted under the above heading, Gray *v.* Spyer, in our issue March 31, has now been reversed by the Court of Appeal, and as the facts are complicated it will save restating them if we note at once the decision of the Court of Appeal (*Weekly Notes*, April 1).

The Court below had held that the agreement granted the tenant the option to continue the tenancy originally granted for a year, but continued on the terms that the tenant gave one month's notice each year of his intention to continue, but if it was desired to determine it two months' notice of such intention created a tenancy from year to year, which could be determined by the lessor by a six months' notice, although the notices required from the tenant were as above, and a declaration was made that the tenancy had been determined by the landlord giving a six months' notice.

The Court of Appeal have now held that the agreement in question did not create a tenancy from year to year at all, but its true effect was to extend the option, at its date limited to one year, to a succession of years limited to the duration of the head lease. It purported to create a succession of reversionary terms for one year certain, provided the requisite notice was given by the tenant before the expiration of each of these terms, an agreement which would be void at law as a lease not being under seal. Therefore the Court of Appeal held neither party to be entitled to the declarations prayed for and both claim and counterclaim were dismissed. We may refer to the case again when fully reported.

Exmouth Municipal Election.

Mr. T. Abell, builder, of Exmouth, after thirty-three years continuous service on the Local Board and the Urban District Council, contested the last election held on April 3rd, and was returned at the head of the poll by a considerable majority.

NEW BUILDINGS IN LONDON.

EAST CENTRAL.—The reconstruction of Mr. Hector Powe's tailoring establishment, at No. 50, Bishopsgate, is now proceeding, comprising a new shop front with marble surround, and the rebuilding of the upper portion. The contract is being carried out by Mr. E. Jenner, builder, of 27, Grosvenor-gardens, S.W.1.

Considerable extensions are now being made to Messrs. Horne Brothers' branch, at 50, Newgate-street. The firm has taken over the adjoining premises at No. 49, which are to be demolished, together with the City Central Hotel at the rear, and a new building is to be erected on the site. The plans have not yet been completed. The general contract has been secured by Messrs. Higgs & Hill, Ltd., of Crown Works, South Lambeth-road, S.W., and the architects are Messrs. Farrow & Turner, of Amberley House, Norfolk-street.

Part of the premises occupying Nos. 1 and 2, Cheapside, recently vacated by Farrow's Bank, is now being reconstructed for occupation by Messrs. Henry Dodgson, Ltd., costumiers and furriers, as an extension of their premises at No. 1, Paternoster-row. The general contract has been secured by Messrs. Whitby's, of 29, Eagle-street, W.C.1. The plans have been prepared by Mr. Marshall, of Liverpool. The new work is confined to the ground floor, which extends through into Paternoster-row and Panyer-alley, and consists of the removal of the existing granite piers and columns and replacing them with compound steel girders throughout. New shop fronts will be supplied by Messrs. Samuel Haskins & Bros, Ltd., of 20, Old-street, E.C.1, The steelwork is being supplied by Messrs. Measures Bros. (1911), Ltd., of 105, Southwark-street, S.E.1.

The entire reconstruction of "The Peacock" public-house is now proceeding at No. 12, Whitecross-street The general contract has been secured by Messrs. Courtney & Fairbairn, Ltd., of 377, Albany-road, S.E.5, who are to convert the two-hundred-year-old premises into a modern licensed house. The sub-contracts for steelwork, &c., have not yet been settled.

WEST CENTRAL.—The Cunard Steamship Co., Ltd., of 51, Bishopsgate, E.C. 2, have now bought the premises occupying 26, Cockspur-street, recently vacated by the London County Council. The building is now in course of reconstruction preparatory to occupation by the Cunard Co.'s West End Passenger Office, removing from 29, Cockspur-street. Extensive structural alterations are proceeding on each of the five floors. The main contract is being, carried out by Messrs. Holloway Bros. (London), Ltd., of Bridge Wharf, Grosvenor-road, S.W. 1. The plans have been prepared by the Cunard Co.'s architects, Messrs. Mewes & Davis. The steelwork used is being supplied by Messrs. Redpath, Brown & Co., Ltd., of 3, Laurence Pountney-hill, E.C. 4. A new heating system will be installed throughout by Messrs. Crittall Manufacturing Co., Ltd., of 246, High Holborn, W.C. 1, who are also supplying casements. Messrs. H. J. Cash & Co., Ltd., of Caxton House, Westminster, S.W. 1, will install a new electric lighting system throughout the building. All the ornamental plastering is being done by Messrs. G. Jackson & Sons, Ltd., of 49, Rathbone-place, W. 1. The sub-contract for glazing has been let to Mr. W. J. Rasey, of Leveridge-road, Kilburn, N.W. 6. The builders are doing all the plumbing work. The new columns to be installed will be of a special type, known as "Espagonelete."

The site occupying No. 13, Regent-street has now been cleared and a start made with the erection of a new five-story building, including a shop with mezzanine story and a large space covered by a domed skylight in the rear. The elevation will be in Portland stone and will follow the lines of Carlton House adjoining. The contractors are Messrs. W. H. Lorden & Son, Ltd., of Trinity-road, Upper Tooting, S.W.; and the plans have been prepared by Mr. Paul Hoffmann, architect, of Capel House, E.C., who is also responsible for the extensive structural alterations to York House adjoining, which was formerly known as the Junior Army and Navy Stores. This has now been converted into an up-to-date office building with banking or shop premises on the ground floor.

Building operations are proceeding at the rear of the premises of Messrs. Godfrey Giles & Co., decorators and cabinet-makers, 11, Fitzroy-square. A small single-floor garage with side workshop is in course of erection, having a frontage of 21 ft. to Fitzroy-street and a depth of 13 ft. The builder is Mr. W. A. King, of Melbourne-square, Brixton, S.W. 9, who will carry out the work in brick and steel construction.

Work has now been commenced on the large extension to the premises of Messrs. David Drage & Sons, Ltd., furnishers, of 231, High Holborn. The new building will have a frontage of 76 ft., and a depth of 45 ft. The plans prepared by the architects (Messrs. Walsh & Hollis, of 7, New-square, Lincoln's Inn, W.C.) show a brick and steel building of five floors, including basement, which will be fitted as modern showrooms. The main contract has been secured by Messrs. Horace V. Clogg, of Vallance-road, E.1. It is understood that a portion of the basement and first floor of the new building will form an extension to Messrs. J. Lyons' refreshment depôt adjoining. The main sub-contracts settled are:—Steelwork: Messrs. H. Young & Co., Ltd., of Nine Elms Iron Works, S.W.8; asphalte: Messrs. Salter, Edwards & Co., Ltd., of Hormead-road, W.9; floors: Messrs. Diespeker & Co., Ltd., of 60, Holborn Viaduct, E.C.1. Other sub-contracts for glazing, &c., are not settled yet.

WILLESDEN JUNCTION.—The Cheseborough Manufacturing Co., of 42, Holborn-viaduct, E.C. 1, are about to erect a large new factory building in this district. Preliminary operations have commenced on an extensive site adjoining the Midland and South Western Junction Railway Bridge, and the new works will have a frontage of 142 ft. to Victoria-road and a return of 100 ft. A two-story building is proposed, to be built in steel and reinforced concrete construction, and the elevations are to be brick cased with stone facings. The building has been designed by Messrs. Johnson's Reinforced Concrete Engineering Co., Ltd., of 1, Basinghall-street, E.C. 2, who are also supplying the steelwork. The building work, including a flat asphalte roof, will be carried out by direct labour under the direction of the factory owners, whose building manager is Mr. H. R. Fenn.

WOOD GREEN.—An extension, comprising new showrooms and offices, is now being made to the premises of Messrs. Cakebread, Robey & Co., at "Caroba" Works, 225, High-road. The architect is Mr. G. E. Holditch, of 174, Basinghall-street, E.C., who has prepared plans which provide for a three-story steel and brick building, built on a site at the rear of the existing premises and having a frontage to River Park-road of about 34 ft. The new building will be faced with red brick and glazed arches. The builders are Messrs. Stapleton & Sons, of 112, High-street, Stoke Newington, N. 16. The sub-contract for the steelwork has been secured by Messrs. Measures Bros. (1911), Ltd., of 105, Southwark-street, S.E. 1. All other work will be done by the builders.

Obituary.

The death has occurred of Mr. John Jarvis, a well-known builder, of Tunbridge Wells, in his seventy-ninth year. Deceased was for a number of years general manager for Messrs. Strange & Sons, and since starting on his own account had been responsible for many large contracts, including the Tunbridge Wells Opera House and adjoining premises (£36,000); the Haymarket Theatre (with the exception of the front); St. Ermin's Hotel, Westminster; and the Tunbridge Wells General Hospital. Mr. Jarvis took an active part in local affairs.

The death has occurred, at the age of 48, of Mr. Thomas Henry Osmond, the last surviving partner of the firm of Osmond Bros., Ltd., the well-known builders and contractors of Ely, Cardiff.

BREACHES OF COVENANT: SUB-TENANTS.

THE case of Berton *v.* Alliance Economic Investment Co., Ltd. (which we commented upon in our issue for December 16), has been carried to the Court of Appeal, where the decision has been reversed (*The Times*, March 3). Our former comments were chiefly directed to certain observations made by the judge on the operation of the Rent Act, but we shall now confine ourselves to the case, which was one of some complication, as decided in the Court of Appeal.

The plaintiffs were the Governors of Alleyn's College, Dulwich, and they, in 1907, had let premises in Camberwell to one Bayldon on an eighty years' lease, which contained covenants to the effect that the house should not be used otherwise than as a private dwelling-house, nor anything be done or suffered on the premises which might cause annoyance to either tenants or occupiers of neighbouring houses, &c. This lease had been assigned to the present defendants in 1919, and the defendants had leased the premises to one Mackintosh under similar covenants, but with the addition of a covenant not to assign or sublet the house or any part thereof without consent. Mackintosh had in 1920, without the licence or knowledge of the defendants, let the house in separate tenements to various weekly tenants. The plaintiffs having called the defendants' attention to this breach of covenant, the defendants had proceeded against Mackintosh and had obtained possession from him, but they had taken no steps as against the sub-tenants (the weekly tenants). The plaintiffs then brought this action against the defendants to recover possession against them. It is a little difficult from the report to say exactly what then occurred as regards the sub-tenants. In the former report, we believe it was stated that the defendants had written that they would take proceedings against them, but there was some suggestion that the defendants intended to apply for an order under section 27 of the Housing, &c., Act, for the conversion of the house into separate tenements. However this may be, the judge at the trial found that the defendants had committed a breach of covenant, but they would be granted relief if they would give an undertaking (1) not to permit further breaches of covenant, and (2) not to apply for an order under the Housing Act. The defendants were willing to give the first of these undertakings, but declined to give the second, and therefore judgment was given for the plaintiffs for possession.

Before the Court of Appeal the case seems to have resolved itself into the question whether the defendants had committed a breach of the covenant, not to permit or suffer the premises to be used otherwise than as a separate dwelling house, &c., by not proceeding against the sub-tenants. It must be remembered they had proceeded against their lessee Mackintosh, but the court below had held they were obliged also to proceed against the sub-tenants to avoid forfeiture. The defendants had some doubts whether they could proceed against the sub-tenants by reason of the Rent Act, and it was to this point we addressed our observations in our former note.

The Court of Appeal appears to have held that, under the covenants in the lease, the onus on the plaintiff was to show that the defendants "had permitted or suffered" the breach to be committed; the defendants themselves had done nothing, but the complaint against them was that they had abstained from doing something, i.e., taking proceedings against the sub-tenants, and the Court held that, having regard to all the circumstances, and especially to the fact that the Rent Act might afford protection to the sub-tennats and there was reasonable doubt that proceedings would succeed, the plaintiff's case failed, as there was not sufficient proof that the defendants had abstained from doing something which they could reasonably be expected to do. We do not know whether this case will be reported in the Law Reports,

but it appears to raise questions of extreme difficulty, and it certainly illustrates another of the extraordinary results produced by the Rent Act.

NATIONAL FEDERATION OF CLERKS OF WORKS' AND BUILDERS' FOREMEN'S ASSOCIATIONS.

THE annual meeting of the National Federation of Clerks of Works' and Builders' Foremen's Associations was held at Birmingham on April 8, a good number of delegates being present from all parts of the country.

Mr. Howe (President of the Birmingham Association) welcomed the delegates, and said the Association in Birmingham had always worked wholeheartedly for the Federation, and was delighted at having the annual meeting under its auspices.

The President of the National Federation (Mr. F. J. Dexter, of London), in responding, spoke in appreciative terms of the work accomplished by the Birmingham Association, and on behalf of his Executive stated that it had always been its endeavour to interpret the wishes of the local Associations in all matters affecting their mutual interests, and he hoped the efforts in this direction had been successful.

The minutes of the General Council, held in London on March 30, were read by Mr. R. W. Meyer (Secretary), who reported that representatives attended from London, Birmingham, Bristol, Cardiff, and other Associations.

Mr. R. W. Dexter next presented the report of the Executive, which showed that during the year eight meetings had been held, and that three new delegates had joined. They had affiliated to the National Confederation of Foremen, Managers, and Supervisory Associations, which had a membership of over 11,000. Matters of mutual interest had been discussed with the National Federation of Building Trades' Employers, and consideration given to the question of raising the status of builders' foremen; a scheme would also be considered with the Institute of Builders with a view to possible examinations. Two Associations had been initiated, in Scotland and Worcester. The membership of the Federation had increased from 700 to 1,000.

Mr. F. J. Knight (Secretary, Birmingham Association) gave his report of his attendance as delegate to the National Confederation of Foremen, Managers, and Supervisory Associations, recently held at Manchester, dealing exhaustively with the deliberations of that body, the question of unemployment insurance, trade boards, industrial councils, and particularly the relationship of foremen's associations to craft unions in cases of industrial disputes. He was heartily thanked for his services.

The election of officers resulted as follows:—President, Mr. F. J. Dexter (London); Vice-President, Mr. G. T. King (London); Secretary, Mr. R. W. Meyer (London); Treasurer, Mr. C. J. Green (London); Trustees, Messrs. W. Melville (London), A. E. Turner (Bristol), and E. J. Davies (Birmingham). Executive Committee: Messrs. E. D Clayton, White, Smart (London), F. J. Knight (Birmingham), and A. E. Turner (Bristol).

After some discussion it was left to the Executive to decide the question of publishing a journal or magazine devoted to their interests.

On the invitation of Mr. Masters, Bristol was selected as the next place of meeting.

A Builder's Estate.

The late Mr. Robert Walton, of Durham builder and contractor, left estate valued at £8,820.

Islington New Town Hall.

Mr. A. Selby has been appointed clerk of works for the new municipal offices in course of erection by the Islington Borough Council on the Tyndale-place site in Upper-street, N.

RATES OF WAGES IN THE BUILDING TRADE.

The following are the rates of wages in the building trade in England and Wales. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons	Bricklayers.	Carpenters, Joiners.	Plasterers	Slaters.	Plumbers.	Painters.	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
Aberdare	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Accrington	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Altrincham	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Ashton-under-Lyne	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Barnsley	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Barrow-in-Furness	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Barry	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Bath	1/7	1/7	1/7	1/7	1/7	1/7	1/7			1/2½
Bedford	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Birkenhead	2/2	2/2	2/2	2/2	2/2	2/2	2/2			1/9½
Birmingham	1/10	1/10	1/10	1/10	1/10	1/11	1/10			1/5
Bishop Auckland	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Blackburn	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Blackpool	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Bolton	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Bournemouth	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Bradford	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Bridgwater	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½			1/0½
Brighton	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Bristol	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Burnley	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Burton-on-Trent	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
Bury	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Cambridge	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Cardiff	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Chatham	1/5	1/5	1/5	1/5	1/5	1/5	1/5			1/1
Chelmsford	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Cheltenham	1/7	1/7	1/7	1/7	1/7	1/7	1/7			1/2½
Chester	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Chesterfield	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Colchester	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Coventry	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Crewe	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
Darlington	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Derby	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Doncaster	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Dudley	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
Durham	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
East Glam. and Mon. Valleys	1/10	1/10	1/10	1/10	1/10	1/10	1/10	1/5		1/5
Exeter	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Folkestone	1/5	1/5	1/5	1/5	1/5	1/5	1/5			1/1
Gloucester	1/7	1/7	1/7	1/7	1/7	1/7	1/6			1/2½
Grantham	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
Grays	1/10	1/10	1/10	1/10	1/10	1/10½	1/9			1/5
Grimsby	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Great Yarmouth	1/5	1/5	1/5	1/5	1/5	1/5	1/5			1/1
Guildford	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Halifax	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Harrogate	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Hartlepools	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Hastings	1/5	1/5	1/5	1/5	1/5	1/5	1/5			1/1
Hereford	1/7	1/7	1/7	1/7	1/7	1/7	1/6			1/2½
Huddersfield	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Hull	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Ipswich	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Lancaster	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Leamington Spa	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
Leeds	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Leicester	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Lichfield	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
Lincoln	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Liverpool	2/2	2/2	2/2	2/2	2/2	2/2	2/2			1/9½
Llanelly	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
London	1/10	1/10	1/10	1/10	1/10	1/10½	1/9			1/5
Loughborough	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Luton	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Maidstone	1/5	1/5	1/5	1/5	1/5	1/5	1/5			1/1
Manchester	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Mansfield	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Merthyr Tydfil	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Middlesbrough	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Newcastle-on-Tyne	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Newport, Mon.	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Northampton	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
Norwich	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Nottingham	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Oakham	1/7	1/7	1/7	1/7	1/7	1/7	1/7			1/2½
Oldham	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Oxford	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Plymouth	1/8	1/8	1/8	1/8	1/8	1/8	1/7			1/3½
Pontypridd	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Portsmouth	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Preston	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Reading	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Rochdale	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Rochester	1/5	1/5	1/5	1/5	1/5	1/5	1/5			1/1
Rugby	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
St. Albans	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
St. Helen's	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Scarborough	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
Sheffield	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Shrewsbury	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
Southampton	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Southend-on-Sea	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Southport	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
South Shields	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Stockport	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Stockton-on-Tees	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Stoke-on-Trent	1/10	1/10	1/10	1/10	1/10	1/11	1/10			1/5
Stroud	1/6	1/6	1/6	1/6	1/6	1/6	1/5½			1/1½
Sunderland	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Swansea	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Swindon	1/7	1/7	1/7	1/7	1/7	1/7	1/6			1/2½
Taunton	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Torquay	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Tunbridge Wells	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Wakefield	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Walsall	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
Warrington	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
West Bromwich	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Wigan	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Windsor	1/6	1/6	1/6	1/6	1/6	1/6	1/6			1/1½
Wolverhampton	1/10	1/10	1/10	1/10	1/10	1/10	1/10			1/5
Worcester	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½
York	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½			1/3½

(For rates of wages in the Building Trade in Scotland, see page 630.)

CONTRACTS, COMPETITIONS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in; the name and address at the end is the person from whom or place where quantities, forms of tender, &c., may be obtained.

BUILDING AND PAINTING.

APRIL 22.—**Manchester.**—FENCING.—Supply and erection of cleft chestnut and post and wire fencing on the Small Holdings situated in Wilbraham-road, Fallowfield, and on the Highfield Estate, Levenshulme, for the T.C. City Surveyor's Office, Town Hall, Manchester. Deposit £1 1s. each.

APRIL 22.—**Manchester.**—PIGGERIES.—Erection of piggeries on the Small Holdings situated in Wilbraham-road, Fallowfield, and on the Highfield Estate, Levenshulme, for the T.C. City Surveyor's Office, Town Hall, Manchester. Deposit £1 1s. each.

APRIL 22.—**St. Anne's-on-the-Sea.**—PUBLIC CONVENIENCES.—For the erection of public conveniences, for the U.D.C. Surveyor, Town Hall, St. Anne's-on-the-Sea.

APRIL 24.—**Acton.**—REPAIRS.—For repairs and decorations to the Isolation Hospital, for the T.C. Borough Surveyor, Municipal Offices, Acton, W.C.3.

APRIL 24.—**Barnsley.**—PAINTING.—Cleansing and painting of the Porter's Lodge and the Old Block at the Kendray Hospital, for the T.C. Borough Engineer, Fairfield House, Barnsley.

APRIL 24.—**Bingley.**—PAINTING.—External painting to two hostels and kitchen block at Bingley Training College, for the West Riding E.C. Education Department, County Hall, Wakefield.

APRIL 24.—**Glasgow.**—SUB-STATION.—Erection of a sub-station at Alexandra Parade, for the T.C. Electrical Engineer, 75, Waterloo-street, Glasgow.

APRIL 24.—**London.**—PAINTING.—For cleaning, painting, and repairing the Northern Fever Hospital, Winchmore Hill, N.21, for the Metropolitan Asylums Board. Offices, Embankment, E.C.4. Deposit £1.

APRIL 24.—**Merthyr Tydfil.**—PAINTING.—For painting of the Lattice Girder Bridge at the Cefn Cemetery, for the T.C. Borough Surveyor, Merthyr Tydfil.

APRIL 24.—**Seaham Harbour, Durham.**—ALTERATIONS.—For alterations and repairs to the Seaham Harbour Council School, for the C.C. Mr. F. Willey, architect, 84, Old Evet, Durham.

APRIL 24.—**Sheffield.**—HOUSES.—Erection of 57 additional houses on the Stubbin Estate, Firth Park, for the T.C. Mr. F. E. P. Edwards, City Architect, Town Hall, Sheffield. Deposit £2.

APRIL 24.—**Sunderland.**—PAINTING.—For outside painting of the Maternity Home, Mowbray-terrace, for the T.C. Borough Engineer, Town Hall, Sunderland.

APRIL 24.—**Whixley.**—ALTERATIONS.—For alterations and adaptations to farmhouses and buildings at (1) Whixley Grange Farm, Whixley, near York, (2) Tancred Farm, Whixley, for the West Riding C.C. County Land Agent, County Hall, Wakefield. Deposit £1 each contract.

APRIL 25.—**Edinburgh.**—ALTERATIONS.—For alterations at the Tramway Depôt, Shrubhill, for the T.C. Mr. James A. Williamson, City Architect, Public Works Office, City Chambers, Edinburgh.

APRIL 26.—**Edmonton.**—PAINTING.—For painting and repairing Enfield House and Fortescue Villas, Enfield, for the B.G. Mr. J. C. S. Mummery, Esq., 34, Bloomsbury-square, W.C.1.

APRIL 26.—**Glasgow.**—LIBRARY.—Erection of a public library in Wellshot-road, for the T.C. Office of Public Works, City Chambers, 64, Cochrane-street, Glasgow. Deposit £2 2s.

APRIL 26.—**London, N.**—CLEANING, PAINTING, REPAIRING.—Cleaning, painting and repairing work at the Northern Fever Hospital, Winchmore Hill, N.21, for the Metropolitan Asylums Board. Office of the Board, Embankment. E.C.4. Deposit £1.

APRIL 27.—**Leamington.**—REINFORCED CONCRETE.—Construction of reinforced concrete bridge over the River Leam, for the B.C. Mr. J. J. Kennan, Borough Engineer, Town Hall, Leamington Spa. Deposit £5.

APRIL 27.—**Penarth.**—ALTERATIONS.—For alterations and additions to the Post Office, for the Office of Works. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W1. Deposit £1 1s.

APRIL 27.—**Penyboni.**—HOUSES.—Erection of 12 type A (north) houses, 12 type B (north) houses, 10 type A (south) houses, 16 type B (south) houses, at Lletal Site, Pencoed, for the R.D.C. Mr. Harmar Cox, Clerk, Council Offices, Wyndham-street, Bridgend.

APRIL 27.—**Ramsey, Isle of Man.**—LAVATORIES.—For the erection of public lavatories in Ramsey, for the Town Commissioners. Messrs. G. Kay & Sons, architects, Douglas.

APRIL 28.—**Rawdon.**—PAINTING.—Painting of Mitchell Memorial Home, Rawdon. Mr. W. H. Brown, County Hall, Wakefield.

APRIL 28.—**Spenborough.**—SUB-STATION.—Erection of an electricity sub-station at Moorend, for the U.D.C. Mr. A. Pickersgill, Electricity Works, Dewsbury-road, Cleckheaton. Deposit £1.

APRIL 29.—**Abernant.**—RENOVATING.—For renovating the Capel Cendy. Mr. D. Davies, Trallwyn. Abernant, College-road, Carmarthen.

APRIL 29.—**Bradford.**—HOUSES.—For the erection of the following houses:—Housing scheme No. 4, Scholemoor—16 houses, class A; 18 houses, class B; and 16 houses, class B and B4, for the T.C. City Architect, Town Hall, Bradford.

APRIL 29.—**Lochgelly.**—FENCING.—Erection of oak and larch fencing in connection with the second development of the housing scheme, for the T.C. Mr. Robert Small, Town Clerk, Town House, Lochgelly. Deposit £2 2s.

MAY 1.—**Burton-on-Trent.**—HOUSES.—For the erection of 8 houses at Wellington-street, for the T.C. Mr. G. T. Synam, Engineer, Town Hall, Burton-on-Trent.

MAY 1.—**Carmarthen.**—PAINTING.—For painting and colouring at various schools, for the C.C. Mr. W. Vincent Morgan, County Architect, County Offices, Carmarthen.

MAY 1.—**London, S.E.**—LIBRARY EXTENSION.—Building an extension of the Central Library at Woolwich-road, for the Greenwich Council. The Borough Engineer and Surveyor, Town Hall, Greenwich-road, S.E.10.

MAY 1.—**Maidstone.**—COTTAGE.—Erection of a cottage at Herts Farm, Loose, near Maidstone, for the Kent C.C. County Land Agent, Sessions House, Maidstone.

MAY 1.—**Steeple Claydon.**—REPAIRS.—Repairs to farm house, water supply, &c., at Claydon Hill Farm, for the Bucks C.C. Mr. G. M. Odam, County Land Agent, 21, Walton-street, Aylesbury.

*MAY 3.—**Purley.**—REPAIRS, PAINTING AND DECORATION.—Repairs, painting and decoration at the Isolation Hospital, Beddington Corner, near Mitcham Junction, for the Wandle Valley Joint Hospital Board. Mr. R. M. Chart, Board's Surveyor, Lower Green, Mitcham. Deposit £2.

MAY 3.—**Todmorden.**—RESLATING.—For reslating the roof of the Cornholme Council School, for the Education Committee. Education Offices, Rise-lane, Todmorden.

*MAY 4.—**Taplow, Bucks.**—Erection of Telephone Repeater Station, for the Commissioners of H.M. Works. Contracts Branch, H.M. Office of Works, King Charles-street, S.W. 1. Deposit £1 1s.

MAY 8.—**Greenwich.**—SUPERINTENDENT'S LODGE.—Erection and completion of a Superintendent's lodge at Greenwich Cemetery, Shooters Hill, for the Metropolitan Borough of Greenwich. Borough Engineer, Town Hall, Greenwich-road, S.E.10. Deposit £2 2s.

MAY 26.—**Hammersmith.**—SHOPS.—For the erection of 4 shops with flats over, on the Wormholt Housing Estate, for the B.C. Mr. Leslie Gordon, Town Clerk, Town Hall, Hammersmith, W.6. Deposit £2 2s.

NO DATE.—**Coalville.**—HOUSES.—Erection of ten houses on the Coalville housing site, for the U.D.C. Messrs. McCarthy, Collings & Co., Central Chambers, Coalville; and Messrs. Goddard & Wain, Station Chambers, Coalville. Deposit £2 2s.

NO DATE.—**Mountain Ash.**—PREMISES.—Erection of business premises in Oxford-street, Mountain Ash. Mr. W. N. Morgan, Maesydderwen. Mountain Ash. Deposit £3 3s.

FURNITURE, MATERIALS, etc.

APRIL 22.—**St. Marylebone.**—PAVING BLOCKS.—For the supply of deal paving blocks, for the B.C. Mr. J. P. Waddington, Engineer, Town Hall, Marylebone-road, N.W.1.

APRIL 24.—**East Preston.**—MATERIALS.—Supply of flints, broken granite, and granite chippings, 40,000 gallons of refined tar, and 1,000 tons of approved gravel, to the R.D.C. Mr. Arthur Shelley, Clerk, Town Offices, Littlehampton.

APRIL 24.—**Glasgow.**—MATERIALS.—Supply of materials to the Electricity Department. Mr. R. B. Mitchell, engineer, 75, Waterloo-street, Glasgow.

APRIL 24.—**Paddington.**—MATERIALS.—Supply of road and other materials to the B.C. Borough Surveyor, Town Hall, Paddington, W.2.

APRIL 24.—**Scunthorpe.**—ROAD MATERIALS.—For the supply of road materials, for the U.D.C. Mr. H. Heap, Engineer, Council Offices, Scunthorpe.

APRIL 24.—**Warrington.**—ASHBINS.—Supply of 500 galvanised steel ashbins, for the T.C. Cleansing Superintendent, Central Sanitary Depot, Howley.

APRIL 25.—**Carshalton.**—ROAD MATERIALS.—For the supply of tar macadam for one year, for the U.D.C. Mr. W. Willis Gale, Engineer, Council Office, The Square, Carshalton.

APRIL 25.—**London.**—MATERIALS.—Supply to the High Commissioner for India of wire iron (galvanised), timber for making packing cases, shovels, stoking, &c., pipes, steel (lap welded or riveted). Director-General, India Store Department, Belvedere-road, Lambeth, S.E.1.

APRIL 26.—**Braintree.**—ROAD MATERIALS.—For the supply of granite and tar, for the U.D.C. Mr. H. H. Nankwell, Surveyor, Vestry Hall, Braintree.

APRIL 26.—**East Ashford.**—ROAD MATERIAL.—For supply of granite to the R.D.C. Mr. T. W. Pullen, surveyor, Kennington, Ashford, Kent.

APRIL 26.—**Glasgow.**—MATERIALS.—Supply of materials to the Baths and Wash-houses Department. Mr. R. B. Thomson, General Manager. 38, College-street, Glasgow.

APRIL 26.—**Hemel Hempsted.**—TAR.—For the supply of 12,000 gallons of refined tar, for the T.C. Mr. W. R. Locke, engineer, Market-square, Hemel Hempsted.

NO DATE.—**Aberdare.**—MATERIALS.—Supply to the Powell Duffryn Steam Coal Co., Ltd., of paints, drysalteries, &c. Stores Manager, Aberaman Offices, Aberdare.

ENGINEERING, IRON AND STEEL.

APRIL 22.—**Croydon.**—GAS ENGINE.—For the supply and erection of a gas engine with producer plant and pumps, for the T.C. Borough Engineer, Town Hall, Croydon. Deposit £1 1s.

APRIL 22.—**Sleaford.**—CONCRETE RESERVOIR.—For the construction of a 40,000 gallon ferro-concrete reservoir at Hill Top, Wilburn, for the R.D.C. Mr. W. B. Marsden, Engineer, Council Offices, Northgate, Sleaford. Deposit £1 1s.

APRIL 24.—**Birstall.**—WEIGHBRIDGE.—Supply of a 20-ton weighbridge at Gasworks, for the U.D.C. Mr. Rufus Ellis, Council Offices, Birstall, near Leeds.

BUILDING TRADE WAGES IN SCOTLAND.*

THE following are the present rates of wages in the building trade in the principal towns of Scotland. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons Labourers	Bricklayers' Labourers	Plasterers' Labourers
Aberdeen	1/10½	1/10½	1/9	1/9	1/9	1/9	1/7	1/5½ to 1/6½		
Airdrie	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½		
Alexandria	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½		
Arbroath	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	1/5½		
Ayr	1/10	1/10	1/10	1/10	1/10	1/10	1/9	1/5½ to 1/6½		
Bathgate	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	1/9	1/5½ to 1/6½		
†Blairgowrie	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	—	—		
Bo'ness	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	2/-	1/8		
Coatbridge	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½		
Dumbarton	1/10	1/10	1/10	1/10	1/10	1/10	1/9	1/5		
Dumfries	1/8	1/8	1/8	1/8	1/8	1/11½	1/8	1/2½	1/2½	1/3½
Dundee	1,10	1/10	1/10	1/10	1/10	1/10	1/9	1/5		
Dunfermline	2/0½	2/0½	2/0	2/0	2/0½	2/0½	—	1/7½		
Duns	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/0		
Edinburgh	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½		
Falkirk	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½		
Fort William	1/10	1/10	1/10	1/10	1/10	1/10	1/10	1/2½		
Galashiels	1/11½	1/11½	1/11½	1/11½	1/11½	1/11½	—	—		
Glasgow	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	2/1	1/7½		
Greenock	1/10	2/0½	1/10	1/10	2/0½	1/9½	1/9	1/5½		
Hamilton	1/10	1/10	1/10	1/10	1/10	1/10	1/9	1/7½		
Hawick	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3		
Helensburgh	2/0½-1/10½	2/0½-1/10½	2/0–1/10	2/0½-1/10½	2/0½-1/10½	2/0–1 10	1/9	1/7½ to 1/5½		
Inverness	1/6½	—	1/6	1/7	1/6½	1/9	1/6	1/0 to 1/3		
Kilmarnock	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	2/1	1/7		
Kirkcaldy	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/6½		
Kirkwall	1/9	1/9	1/9	1/9	1/9	1/9	—	1/2		
Lanark	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7		
Motherwell	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½		
Perth	1/10	1/10	1/10	1/10	1/10	1/10	1/9	1/4		
Stirling	1/10	1/10	1/10	1/10	1/10	1/10	1/9	1/5		
Stirlingshire (Eastern District)	2/0	2/0	2/0	2/0	2/0	2/0	1/9	1/7		
Wishaw	2/0½	2/0½	2/0½	2/0½	2/0½	2/0½	—	1/7½		

* The information given in this table is copyright. The rates of wages in the various towns in England and Wales are given on page 629. † For housing work only; for other work, Masons 1/8, Painters 1/7, Labourers 1/- to 1/4.

APRIL 24.—**Edinburgh.**—FEEDER BOXES.—Supply of feeder and section pillar boxes to the T.C. Tramways Manager, 2, St. James'-square, Edinburgh.

APRIL 24.—**Edinburgh.**—MACHINE TOOLS.—Supply to the Tramways Department of one Universal milling machine and one screw-cutting lathe. Tramways Manager, 2, St. James'-square, Edinburgh.

APRIL 24.—**Edinburgh.**—TRAMWAY EQUIPMENT.—Supply to the Tramways Department of trucks, electrical equipment of cars, wheels, and axles. Tramways Manager, 2, St. James'-square, Edinburgh.

APRIL 24.—**Manchester.**—BRIDGE.—For the strengthening of the bridge carrying Great Bridgewater-street across the Manchester and Salford Junction Canal, for the T.C. City Engineer, Town Hall, Manchester. Deposit £2 2s.

APRIL 25.—**Ilford.**—BRIDGE.—For the construction of the Red Bridge in reinforced concrete, for the U.D.C. Mr. H. Shaw, Engineer, Town Hall, Ilford. Deposit £2 2s.

APRIL 26.—**Bristol.**—FOUNDATIONS.—Construction of foundations for No. 14 turbo-generator, at the Feeder-road Power Station, St. Philip's, for the T.C. Mr. H. Faraday Proctor, Chief Engineer, The Exchange, Corn-street, Bristol. Deposit £2 2s.

APRIL 26.—**London.**—LIFTS, ETC.—For (*a*) Installation of two electric automatic passenger lifts and two electric automatic service lifts at Tooting Bec Mental Hospital, Tooting, S.W.17; (*b*) Installation of a new 3 in. cast-iron socket and spigot gas main and connections at the North Western Fever Hospital, Lawn-road, Hampstead, N.W.3; (*c*) Installation of a new brick-built baker's oven at the North Western Fever Hospital, Lawn-road, Hampstead, N.W.3, for the Metropolitan Asylums Board. Offices, Embankment, E.C.4. Deposit £1.

APRIL 29.—**Needham Market.**—BRIDGE.—Construction of 43 ft. waterway, in three spans, the centre 22 ft.; to be reconstructed on an approved system of reinforced concrete, for the East Suffolk C.C. Mr. H. Miller, 16, Museum-street, Ipswich. Deposit £2 2s.

APRIL 29.—**Salford.**—HEATING.—For heating installation at Broughton High School, for the T.C. Secretary, Education Office, Chapel-street, Salford.

MAY 1.—**Glasgow.**—GATES, RAILINGS, &C.—Wrought iron railings, gates, and bronze metal grilles required in connection with the extension of the municipal buildings. Messrs. Watson, Salmond & Gray, 242, West George-street, Glasgow. Deposit £5.

MAY 1.—**Oxford.**—BRIDGE.—For rebuilding Pacey's Bridge. Mr. J. E. Wilkes, Engineer, Town Hall, Oxford. Deposit £5.

MAY 2.—**Cardiff.**—BOILER HOUSE ROOF.—For the supply and erection of overhead steel bunkers, constructional steelwork and boiler-house roof, for the T.C. Electrical Engineer, The Hayes, Cardiff.

MAY 2.—**Cardiff.**—HOT WATER SERVICE.—Provision of new hot water service, boiler, range, &c., at Probationary Wards and Hospital Headquarters Homes, Ely, for the Board of Guardians. Mr. R. Stephenson, Clerk, Union Offices, 11, Park-place, Cardiff.

MAY 2.—**London.**—LOCOMOTIVES.—For the supply of locomotive engines, for the High Commissioner for India. Director-General, India Store Dept., Belvedere-road, Lambeth, S.E.1.

MAY 4.—**Leeds, etc.**—ENGINEERING LABOUR.—Supply of engineering labour during the period of three years in the following districts: Leeds (Mechanical), Newcastle (Electrical and Mechanical), Southampton (Electrical and Mechanical), for H.M. Commissioners of Works. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W.1.

MAY 5.—**Chester.**—EMBANKMENT.—Rebuilding and strengthening portion of retaining wall and strengthening the whole of the embankment at Grosvenor Bridge, for the T.C. Mr. C. Greenwood, City Engineer, Town Hall, Chester. Deposit £2 2s.

MAY 5.—**London.**—STEEL SHEETS.—For the supply of steel sheets for tube making, for the High Commissioner for India. Director-General, India Store Department, Belvedere-road, Lambeth, S.E.1.

MAY 7.—**Rochdale.**—SULPHATE OF AMMONIA PLANT.—Supply and erection of sulphate of ammonia plant, for the Gas Committee. Chairman, Gas Committee, Gas Works, Rochdale.

MAY 20.—**Enniskillen.**—RAILS.—Supply to the Sligo, Leitrim and Northern Counties Railway Company of 240 tons of British Standard flat-bottom steel rails, with fishplates. Secretary, S.L. and N.C. Railway, Enniskillen.

JUNE 19.—**Argentina.**—BRIDGES.—Supply and erection of suspension bridges for local authorities. Dept. of Overseas Trade, 35, Old Queen-street, S.W.

AUGUST 1.—**Siam.**—RAILWAY CARRIAGES.—For the supply of 25 underframes for bogie carriages, for the Department of State Railways. Messrs. C. P. Sandberg, 40, Grosvenor-gardens, S.W.1. Charge £2.

OCTOBER 31.—**New South Wales.**—BRIDGE.—Construction of the superstructure and substructure of a cantilever bridge across Sydney Harbour from Dawes Point to Milson's Point, for the Government of New South Wales. Agent-General for New South Wales, Australia House, Strand, London, W.C.2.

NO DATE.—**Halifax.**—REFUSE SALVAGE PLANT.—For the supply of a refuse salvage plant, for the T.C. Mr. W. H. Sagar, Cleansing Superintendent, Hall-street, Halifax.

ROAD, SANITARY, AND WATER WORKS.

APRIL 22.—**Sleaford.**—WATERWORKS.—For laying cast-iron water mains and the erection of an engine-house, for the R.D.C. Mr. W. B. Marsden, Engineer, Council Offices, Northgate, Sleaford. Deposit £1 1s.

APRIL 24.—**Alsager.**—BOREHOLE.—Deepening an existing borehole, for the U.D.C. Messrs. G. & F. W. Hodson, Consulting Engineers, Loughborough. Deposit £2 2s.

APRIL 25.—**Wembley.**—TAR SPRAYING.—For tar-spraying roads in the district, for the U.D.C. Mr. C. R. W. Chapman, Engineer, Council Offices, Wembley, Middlesex.

APRIL 26.—**Birmingham.**—SEWERS.—Construction of about 130 yards of 36 in. dia. brick and concrete sewer, for the T.C. Mr. Herbert H. Humphries, City Engineer, The Council House, Birmingham. Deposit £2.

✱APRIL 26.—**Edmonton.**—TAR PAVING, PATHS, GROUNDS.—Tar paving at the Chase Farm Schools, The Ridgeway, Enfield, for the Guardians of the Edmonton Union. Mr. E. Ridley, clerk, 77, Bridport-road, Edmonton, N.18.

APRIL 26.—**Ilkley.**—ASPHALTING.—For executing asphalte work at the Middleton-in-Wharfedale Sanatorium, near Ilkley, for the West Riding C.C. West Riding Architect, County Hall, Wakefield.

APRIL 27.—**Arnold.**—ROADS.—Making-up of parts of Woodthorpe-avenue and Marlborough-road, Woodthorpe, for the U.D.C. Mr. R. E. Clarke, Surveyor, Public Offices, Arnold.

APRIL 27.—**Kirkcaldy.**—WATER MAINS.—Cutting tracks for laying five miles of 9 in. and 2 in. cast-iron pipes, for the District Water Board. Messrs. J. & A. Leslie & Reid, C.E., 72A, George-square, Edinburgh. Deposit £1.

APRIL 27.—**Lincoln.**—SEWAGE WORKS.—For extensions to sewage pumping station, Canwick, for the T.C. Messrs. Elliott & Brown, Engineers, Burton Buildings, Parliament-street, Nottingham. Deposit £10 10s.

APRIL 27.—**Swansea.**—ROAD.—Construction of a new road, approximately 1¼ miles long, between Dunvant and Gowerton, for the R.D.C. Messrs. Morgan Davies & Partners, 62, Wind-street, Swansea. Deposit £2 2s.

APRIL 29.—**Perthshire.**—ROADS.—Reconstruction of 14½ miles of road through Glen Dochart, Glen Falloch, and at Tyndrum, for the Perthshire C.C. Mr. W. L. Gibson, Road Surveyor, Road Surveyor's Office, Dunblane. Deposit £2 2s.

MAY 1.—**Swanage.**—TAR-SPRAYING.—For tar-spraying, for the U.D.C. Mr. F. B. Goodman, Surveyor, Town Hall, Swanage.

MAY 4.—**Dover.**—ROADS, &C.—For construction of roads and sewers and laying of water mains in connection with housing scheme, for the T.C. Borough Engineer, Maison Dieu House, Dover. Deposit £2 2s.

MAY 5.—**Swindon.**—SEWAGE DISPOSAL.—Construction of sewage purification works, Rodbourne, for the T.C. Mr. G. Midgley Taylor, 36, Victoria-street, Westminster, S.W.1. Deposit £5.

MAY 6.—**Egham.**—TAR PAVING.—For laying tar paving in the girls' and infants' playgrounds at the Englefield Green Schools, for the Managers. Mr. F. H. Villiers, Treasurer, Englefield Green.

NO DATE.—**Southall.**—ROADS, &C.—For the construction of roads and sewers on the Brickfield Site, for the U.D.C. Mr. F. Hall-Jones, Architect, Parliament Mansions, Victoria-street, Westminster, S.W.1. Deposit £2 2s.

Competitions.

(*See Competition News, page* 592.)

Auction Sales, Tenders, etc.

APRIL 21, 22, and 24. — **Cramlington, Northumberland.**—Messrs. Anderson & Garland will sell, by direction of the Disposal Board, at Cramlington Aerodrome, Northumberland, hutting, corrugated iron sheds, brick buildings, electric generating plant, heating boilers and plant, sanitary fittings. Auctioneers, New Market-street, Newcastle-upon-Tyne.

APRIL 25.—**Clapham, S.W.** — Messrs. Veryard & Yates will sell, without reserve, at 255, Clapham-road, Stockwell, timber, fittings, and building materials. Auctioneers, 365, Norwood-road, S.E. 27.

✱APRIL 25.—**Hackney.**—Messrs. Joseph Hibbard & Sons will sell, without reserve, by order of Messrs. Yates & Co., at the saw mills, Edith-street, Hackney-road, saw mill plant and timber. Auctioneers, 15, Newington Green, Islington, London, N.16.

✱MAY 2 & 3.—**Herts.**—Messrs. Joseph Hibbard & Sons will sell, at Marshmoor Mill, Herts (without reserve, by order of Messrs. Timber Operators and Contractors, Ltd.), stock of dry English timber, including 50,000 ft. cube ash and oak and various other assortments.—Auctioneers, Newington Green, Islington, N.16.

✱MAY 3.—**West Norwood, S.E.**—Messrs. Veryard & Yates will sell, without reserve, at 126A, Norwood-road, S.E., timber, fittings, and building materials, oak panelling and carvings. Auctioneers, 365, Norwood-road, S.E.27.

✱MAY 9.—**Brocton, Staffs.**—GOVERNMENT SURPLUS STORES.—Messrs. Leopold Farmer & Sons will sell, at the Central Stores Depot 375, Brocton, Staffs, £5,000,000 to £10,000,000 deal in Government surplus stores, comprising builders' plant and materials, &c. By order of Messrs. Rownson, Arew & Clydesdale, Ltd.

✱MAY 10.—**Isleworth.**—Messrs. Cockett & Henderson will sell (by order of the Trustees of the late Andrew Pears, deceased), at the Milford Arms Hotel, Spring-grove, Isleworth, very valuable freehold building lands, factory sites, and accommodation holdings on main London-road, Spring-grove, Isleworth. Auctioneers, 100, Jermyn-street, London, S.W.1.

Exeter Cathedral.

A detailed report on the work necessary for the preservation of Exeter Cathedral has been prepared for the Dean and Chapter by Mr. E. H. Harbottle, F.R.I.B.A. The report outlines work which is urgently needed to the west screen and front, the main building, the north Norman tower, the south tower, and roofs.

NEW COMPANIES.

THE particulars quoted below have been compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, of 116 & 117, Chancery-lane, W.C.2, from the documents available at the Companies' Registry.

JAMES WHIFFIN & SONS, LTD. (178,437.) Registered December 16. Builders and contractors. Nominal capital, £8,000.

SANTILS, LTD. (178,450.) Registered December 16. 74, Newman-street, Oxford-street, W. Builders and contractors. Nominal capital, £2,000.

VINERY, LTD. (178,454.) Registered December 16. Rosebank Wharf, Fulham, S.W. To acquire land, buildings and hereditaments, and turn same to account, and carry on the business of builders and contractors. Nominal capital, £1,000.

W. D. CORNISH, LTD. (178,455.) Registered December 16. 4, Regent-street, S.W.1. Brick and tile manufacturers and merchants. Nominal capital, £1,000.

SAFETY SCAFFOLDING, LTD. (178,479.) Registered December 17. 23, Llangyfelach-road, Swansea, Glam. To make and let out for hire combined ladders and scaffold supports and the business of builders, builders' merchants, &c. Nominal capital, £300.

LANCASHIRE COMPOSITION FLOORING CO., LTD. (178,792). Registered January 2. Nominal capital. £500.

DEAN FOREST TIMBER CO., LTD. (178,807.) Registered January 3. Whimsey, Cinderford, Gloucester. Nominal capital, £15,000.

JAMES FLETCHER, LTD. (178,818.) Registered January 3. Parkfield Brickworks, Parkfield-road, Great Lever, Bolton. Brickmakers Nominal capital, £12,000.

MAURICE C. TUBBS, LTD. (178,820.) Registered January 3. The Bain, Station-road, Rayleigh, Essex. Timber and builders' merchants. Nominal capital, £1,000.

ADLINGTON & NUTTALL, LTD. (178,827.) Registered January 3. Timber merchants. Nominal capital, £5,000.

ELLIS SYKES & SON, LTD. (178,843.) Registered January 4. Princess-street, Stockport, Chester. Ironmongers and dealers in builders' requisites. Nominal capital, £14,000.

SOUTHERN COUNTIES STOVE AND COAL CO., LTD. (178,853.) Registered January 4. Makers and suppliers of anthracite of all kinds of stoves and heating appliances, &c. Nominal capital, £1,000.

THOS. H. BURNS, LTD. (178,871.) Registered January 5. 10, Goree Piazzas, Liverpool. Paint, colour and varnish manufacturers, ship and house painters and decorators. Nominal capital, £4,000.

T. HUMPHREYS & SONS, LTD. (178,855.) Registered January 4. 184, Tennant-street, Birmingham. Builders & contractors. Nominal capital, £5,000.

JOHN RICHARDSON & CO., LTD. (178,905.) Registered January 7. 38, Dean-street, Newcastle-upon-Tyne. Painters, paperhangers, decorators, and glaziers. Nominal capital, £2,000.

CARLTON BUILDING & DECORATING CO., LTD. (179,682.) Registered February 14. Nominal capital, £2,000.

A. PEARCE & CO., LTD. (179,677.) Registered February 14. Dockside, Porthcawl, Glamorgan. Builders' merchants, builders and contractors. Nominal capital, £500.

ALFRED COE, LTD. (179,708.) Registered February 15. 15, Crown-street, Ipswich. Brick makers, lime burners and builders' merchants. Nominal capital, £8,000.

LEATHERHEAD BUILDING CO., LTD. (179,720.) Registered February 15. Montague House, Bridge-street, Leatherhead, Surrey. Nominal capital, £1,000.

J. BOANSON & SON, LTD. (178,928.) Registered January 9. 57, Church-street, West Hartlepool. Painters, decorators, &c. Nominal capital, £5,000.

PROPOSED NEW BUILDINGS & OTHER WORKS.*

IN these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C for Rural District Council; E.C. for Education Committee; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ABERDEEN.—Plans passed for the T.C.: Shed, Bedford-road, for Shell-Mex, Ltd., per Mr. J. C. Irvine; workshop, 260, Holburn-street, for Mr. W. Duncan, jun.; garage, 204, Great Western-road, for Mr. J. F. Ewen, per Jenkins & Marr; alterations, 83, Union-street, for Mr. F. Cartwright, cabinet maker, per Mr. G. Watt; garage, 21-23, Irvine-place, for Mr. Forbes Morrison, slater, per Mr. G. B. Fowlie; garage at the rear of 19, Westburn-drive, for Mr. R. Littlejohn, per Sutherland and George; additions to house, 24, Caledonian-place, for Miss L. S. Reid, per Mr. W. E. Gauld; alterations in connection with store at the Union Glen for the trustees of the late Mr. W. Sim, per Mr. A. H. L. Mackinnon; and garage, Broomhill-avenue, for Mrs. Third, St. Aubins, per Sutherland & George.

ASHBURTON.—Plan passed by U.D.C.: Bank, corner of East-street and St. Lawrence's-lane, for the London City & Midland Bank.

AYLESBURY.—Plans passed by B.C.: Window, 43, Buckingham-road; Mr. R. Eaton, for Mr. Kebble; alterations to stables, Mr. R. Eaton, for Mr. F. Jenns; school premises, New-street, Messrs. Crook & Judd, for Misses Amery & Gleeves.

BARLBOROUGH.—The Eckington justices have passed plans, on behalf of the Worksop and Retford Brewery Co., for alterations at the "De Rhodes Arms," Barlborough.

BARNSLEY.—The plans have been approved for the erection of a new cinema, Doncaster-road, Barnsley. The architect is Mr. P. A. Hinchliffe, F.R.I.B.A., 14, Regent-street, Barnsley, and 19, St. James'-street, Sheffield.—The plans have been approved for the rebuilding, after fire, of the premises of Messrs. Smith & Marshall, Market Hill, Barnsley. The premises have been taken over by Messrs. Boots & Co., chemists. The architects are, c.o. Messrs. Boots & Co., Chemists, Nottingham.—The plans have been approved for the additions and alterations to a large residence, Bond-road, Barnsley. The architects are Messrs. Senior & Clegg, Regent-street, Barnsley.

BERKHAMSTED.—Plan passed by U.D.C.: Shop front, 139, High-street.

BILSTON.—The Staffordshire justices have agreed to a transfer of the licence of the "Samson and Lion" Inn, Bilston, to new premises proposed to be erected near Ashley-street, for Messrs. W. Butler & Co.

BOURNEMOUTH.—It is reported that the Portman Estate at Boscombe has been acquired and will be laid out for building, and that 200 houses will be erected.

BRAMPTON.—Plans have been passed by the R.D.C. for the erection of three bungalows on the Red Beck estate, Gilsland, for Messrs. Armstrong & Thomlinson, Gilsland.

BUXTON.—Plans passed by T.C.: Garage in Lightwood-road, for Mr. Harrison; electric power house and gas generating house, for the Buxton Palace Hotel Co., Ltd.; motor garage, Lascelles-road, for Mrs. C. A. Binns; petrol store off Market-street, for Mr. Ball; garage in Marlborough-road, for Mr. S. A. G. Smith.

DERBY.—In the past month the Building Act Committee have approved the following plans:—Dwelling-houses, 3; additions to houses and shops, 2; additions to works, 2; dairy, 1; office, 1; miscellaneous, 7.

DEWSBURY.—Plans passed by T.C.:—Dewsbury Pioneers' Industrial Society, alterations to shop premises in Vulcan-road; John Sunman, garage, Northfield-place; and Edge Top Working Men's Club, institute.

DONCASTER.—The Minister of Transport has made the Doncaster Corporation Light Railways (Extensions) Order, 1922, authorising the construction of a light railway in the borough of Doncaster in extension of the existing light railway undertaking of the Corporation and for other purposes.—The plans have been approved for the erection of a new cinema, West Laithe Gate, Doncaster. The architect is Mr. P. A. Hinchliffe, 19, St. James'-street, Sheffield, and 14, Regent-street, Barnsley.—The plans have been approved for the erection of a new bank in High-street, Doncaster, for the National Provincial & Union Bank of England, Ltd. The architects are, c.o. The Head Office, The National Provincial Bank, Ltd., London.

EAST HAM.—Plan passed by B.C.: Two houses, 40 and 42, Beverley-road, by Messrs. Grover & Brown.

FAREHAM.—Plans passed by U.D.C.: Workshop and drying shed at "The Gillies," for Mr. J. C. Langford; cart shed, 161, West-street, for Mr. W. P. Ierston; shed, 11, Trinity Gardens, for Mr. Farrell.

GRANTHAM.—The Health Committee has instructed the Borough Surveyor (Mr. Gilbert A. Ballard) to prepare a scheme, which is to be submitted at the next meeting of the T.C., for the reconstruction of the refuse destructor works.

IPSWICH.—No opposition was offered at the Ministry of Health inquiry into the application of the T.C. to borrow £27,770 for the provision of public baths in St. Matthew's-street.

LECKHAMPTON.—A guarantee for a loan of £50,000 has been obtained by the Leckhampton Quarries, Ltd., for the construction of a railway from Limestone Quarries to the G. W. Railway.

LIVERPOOL.—Movements of the utmost importance are taking place just now in regard to Liverpool city properties, says the *Liverpool Daily Courier*. The fall in the cost of building materials has led certain firms to take from their shelves and inspect once more the schemes for building extension which they had been compelled, owing to the economic conditions, to put on one side. Many of these schemes, the writer learns, are now likely to materialise, offering work to great numbers of men at present unemployed. Great blocks of city properties have been earmarked for demolition in the very near future, and upon their sites will be erected handsome buildings which will prove a great credit to the city and of considerable advantage to the firms concerned. One of these schemes will affect the precincts of Liverpool Town Hall. Within a stone's throw of that historic building properties which have housed commercial institutions for generations will be pulled down to give place to a more imposing and spacious building identified with the shipping interests of the port and country. Plans have been recently approved for a fine building at the South Docks connected with an oil firm, which is likely to give more employment; and other schemes are coming to the front and will soon be heard of.

LONDON.—Amongst the list of firms to whom facilities are being granted by the Treasury for loan guarantees for the carrying on of work, are the Regent's Canal & Dock Co., Ltd., £40,000 (20 years), for various improvements in Limehouse basin; Underground Railway, £5,000,000 (50 years), for enlargement of tunnel of the City and South London Railway, improvement of stations and provisions of new rolling stock, and extension of London Electric Railway from Golder's Green to Edgware; South-Eastern and Chatham Railway Co., £6,500,000 (25 years), for electrification of suburban lines.—It is reported that the contract for the construction of the new hall at Olympia has been given to Messrs. P. & W. Anderson, Ltd., Glasgow and London. The estimated expenditure is £150,000.

MANCHESTER.—Plans approved:—Addition to offices of works, Kelsall-street, Thomas-street, West Gorton; alterations to "Barker's Wine Bar," 80–82, Oxford-street; alterations to front of premises, 43, Market-street; conversion of warehouse into electricity sub-station, Greenwood-street and Seven Stars-court; alterations to premises, 323, Ashton Old-road and Oliver-street, Openshaw; details of steelwork to premises, 12–16, Booth-street and Kennedy-street; conveniences to warehouse, 44, Thomas-street and Back Turner-street; alterations to the Engineers' Club, Albert-square and County-street; details of steelwork, &c., to premises, Nos. 22–24, Oldham-street; revised plan and section of shop front, Nos. 84–86, High-street; alterations to premises, Great Ancoats-street and Newton-street; alterations to premises, No. 152, Ashton Old-road, Openshaw; garage, Ashton Old-road, Johnson-street, and Toxteth-street, Openshaw; conversion of stables into garages and workshop off Hassop-street, Euclid-street, Beswick; shop front, 550, Oldham-road and Varley-street, Newton Heath; St. Michael's Rectory, Station-road and Seymour-road, Crumpsall; alterations and additions to public-house, 2, North-street and Cheetham-street, Cheetham; alterations to premises, 173-177 Great Ducie-street Cheetham; additions to Cheetwood Hotel, Derby-street and Cheetwood-road, Cheetham; motor repair shop, Culcheth-lane, Newton Heath; alterations and additions to premises, York-street and Wilmslow-road, Didsbury; two houses, Brighton-grove and Danes-road, Rusholme; electricity sub-station, Alexandra-grove, Chorlton-upon-Medlock; chocolate works, offices, &c., Manor-road and Mayfield-road, Levenshulme; alterations to dairy, Mentor-street, Rusholme; café and offices, Oxford-road, Charles-street, and Medlock-street, Chorlton-upon-Medlock; additions to "Lyncroft," Fog-lane, Didsbury; coal house to Moorton Lodge, Moorton-avenue, Burnage; garage and store, Baker-street and Wood-street, West Gorton; boiler-house to dairy, Ladybarn Farm, Mauldeth-road, Withington; conversion of houses into shops and houses, Nos. 176–186, Hyde-road and Hall-street, Gorton; additions to house, "St. Olaves," Clayton-avenue, Didsbury; revised plan of drains of temporary cow sheds, Mauldeth-road, Withington; stables, Bickley-street, Moss Side; additions to house, No. 59, Greame-street, Moss Side; alterations to premises, Devonshire-street and Alice-street, Hulme; garage, w.c., &c., at rear of house, No. 25, St. Werburgh's-road, Chorlton-cum-Hardy; washhouse and garage to house, St. Werburgh's-road, Chorlton-cum-Hardy; alterations to the "Lord Lyon," P.H., No. 492, Claremont-road, and Nelson-street, Rusholme; steel and glass roof over disintegrating plant to works, Newcastle-street and River-street, Holme; addition to showroom and workroom, Great Jackson-street, Hulme; oil store to Manchester Autodrome, Leamington-street, Chorlton-upon-Medlock; alterations to premises, No. 364, Moss-lane East and Monton-street, Moss Side; addition to Fine Sheet Rubber Stores, Hulme-street, Chorlton-upon-Medlock; dwelling-house, St. Werburgh's-road, Chorlton-cum-Hardy; alterations to shop and house, No. 394, Stretford-road, Hulme; extension of motor house, "Axholme," Wilbraham-road, Fallowfield; garage at rear of house, No. 26, South Drive, Chorlton-cum-Hardy; storage warehouse, Lower Ormond-street, James-street, and Lord-street, Chorlton-upon-Medlock; alterations to paper stores, Worsley-street and Egerton-street, Hulme; staircase, &c., to Theatre Royal Cinema, Peter-street; additions to premises, 16, Oak-street and Green-street; drains, 370 and 372, Ashton New-road, Bradford; additions to premises, Star Buildings, Deansgate; alterations to premises, 215–17, Deansgate, and No. 1a, Peter-street; store and cart shed to works, Store-street, Ancoats; alterations to premises, 17, Minshull-street and Fetter-lane; garage, Gartside-street and Irwell-court; bottling store, garage, and warehouse off Oliver-street, Ashton Old-road, Openshaw; alterations to bank, Mosley-street and Back Mosley-street; alterations to premises, No. 26, Oldham-road; transformer house, Lower Vickers-street and Sycamore-street, Miles Platting; alterations to premises, York-street, Chorlton-upon-Medlock; two houses, Grange-avenue, Levenshulme; additions to bakery, St. Leonard's-street, Chorlton-upon-Medlock; alterations and additions to Bowling Green Hotel, Grafton-street, Chorlton-upon-Medlock; stables at rear of 167, Plymouth-grove, Chorlton-upon-Medlock; revised plan of basement and first floor to La Scala Picture Hall, Oxford-road, and Booth-street East, Chorlton-upon-Medlock; addition to house, "Redland Villa," Kent-road and Conyngham-road, Rusholme; private hotel, Platt-lane and Wilmslow-road, Rusholme; conversion of two houses and shops into workshop, store, and showroom, 94 and 96, Barlow Moor-road, Chorlton-cum-Hardy; dwelling-house, Manor-drive, West Didsbury; addition to house, 51, Beech-road and Provis-road, Chorlton-cum-Hardy.

MIDDLESBROUGH.—The T.C. has decided to purchase a private residence and grounds at Grove Hill for a school site.

NELSON.—Plans passed by T.C.: Nelson and District Manufacturers' Association, alterations and additions, Laurel Bank; A. Middlebrook, wash-house, Norwood-avenue; Nelson Co-operative Society, ashpit, Clifton-street; Nelson Co-operative Society, cover to hoist, Back Barkerhouse-road; and Regent Picturedrome Co., a cinema, Leeds-road.

NEWCASTLE-ON-TYNE.—The Housing Committee is recommending the City Council to accept the tender of the Building Guild for the erection of 232 houses on the Pendower Estate. The tender sent in by the Guild was the lowest received, the difference between the highest and lowest being nearly £70,000.

PAISLEY.—Plan passed:—Villa, Alton-road, for Mr. Donald Campbell, M.A.

RHYMNEY.—The Treasury is making an advance of £250,000 to the Rhymney Valley Sewerage Board, for drainage and disposal scheme for urban districts in Rhymney Valley.

ROMFORD.—The R.D.C. has decided to make application to the Ministry of Health for sanction to borrow £12,400 for 30 years for sewerage works at Hornchurch.

RUISLIP-NORTHWOOD.—It is proposed to erect a new police-station in the village.

SHEFFIELD.—The plans have been approved for the erection of a new cinema, Moorfields, Sheffield. The architect is Mr. P. A. Hinchliffe, F.R.I.B.A., 14, Regent-street, Barnsley, and 19, St. James'-street, Sheffield. — The Estates Committee proposes pulling down 43 cottages in a congested area and erecting houses in lieu thereof away from the centre of the city, on the understanding that the Council is responsible for the whole of the expenditure incurred.—The City Architect has been authorised to prepare plans for the erection of a further 50 houses.

SOUTHEND-ON-SEA.—Mr. F. Gregson Williams, an Inspector of the Ministry of Health, has held an inquiry with respect to the application of the T.C. for sanction to the borrowing of £400 for the conversion of the existing sea-water pumping station, situate opposite the Ship Hotel, Marine-parade, into a public convenience. There was no opposition.

STRETFORD.—Plans passed by the U.D.C.:—Motor house, "Hazelhurst," 191, Urmston-lane, for Mr. George Broady; two houses, Sandy-lane and Urmston-lane, for Messrs. Longworth & Maunders; motor house, 193, Urmston-lane, for Mr. J. M. Marriott; addition to bakehouse, 16, King-street, for Mrs. Rye; addition to works, off Westinghouse-road, for the Whitehall Asphalte and Engineering Co., Ltd.; boiler house, Trafford Park-road, for the Stretford Urban District Council Electricity Committee; offices, &c., Skerton-road, for Messrs. W. J. Brookes & Sons, Ltd.

SUNBURY.—Plans passed by U.D.C.: Bungalow in Kempton-avenue, cloak rooms, lavatories, &c., at the Auction Rooms in Station-road, an extension and covered way adjoining Russell House.

SWANSEA.—The tender for the construction of the new dry dock at the King's Dock has been placed by the Palmer Shipbuilding & Iron Co., Jarrow, with Sir John Jackson & Co., Ltd., London. The dock, which will be large and elaborately equipped, in the form of two parallel docks, Messrs. Palmer intend to construct on a site near the King's Dock entrance, and it will be 560 feet long and 75 feet broad.

THATCHAM.—Cropper & Co., Ltd., are offering a guarantee for a loan of £100,000 (ten years) under the Trade Facilities Act, for building and equipment of new factory for manufacture of folding boxes at Thatcham.

WALSALL.—It has been decided by the T.C. to apply to the Ministry of Health for permission to erect 100 additional houses in blocks of six or eight at an estimated approximate cost of £400 per house.

WORTHING.—Plans passed by T.C.: Four houses, fronting West-avenue, for Messrs. Adams & Collier; two houses, Windsor-road, Mr. H. M. Potter, for Messrs. A. Crane & Son; addition, "Corville," Gratwicke-road, Mr. J. E. Lund, for Mrs. Tanner; garage, Mill-road, for Mr. A. Adams; addition, 1, Brighton-terrace, Mr. H. M. Potter, for Messrs. G. Standing & Sons.

YEOVIL.—The T.C. has decided to make application to the Ministry of Health for permission to raise a loan of £12,285 for the purchase and installation of a carburetted water-gas plant and other necessary work at the Corporation Gasworks.

FIRES.

AIRDRIE.—The extensive woodyard and sawmill of Messrs. Wm. Shanks & Sons, Chapel-street, have been destroyed by fire.

BIRMINGHAM.—A fire has occurred on the premises of Messrs. Gaskell & Chambers, bar fitters, at Dale End.

EDINBURGH.—An outbreak of fire, causing extensive damage has occurred at the premises of Messrs. H. Meyer, Ross & Co., 10 and 11, Fettes-row.

* See also our List of Contracts, Competitions, etc.

PRICES CURRENT OF MATERIALS.*

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry. Since our last issue several prices have been revised.—Ed.]

BRICKS, &c.

Per 1,000 Alongside, in River Thames up to London Bridge. £ s. d.

Best Stocks 4 2 0

Per 1000, Delivered at London Goods Stations.

Flettons, at	£ s. d.		£ s. d.
King's Cross	3 5 0	Best Blue Pressed Staffs.	10 11 6
Do. grooved for plaster.....	3 7 0	Do. Bullnose ..	11 1 6
Do. Bullnose ..	4 0 0	Blue Wire Cuts	8 11 6

Best Stourbridge Fire bricks:—

2½ in.	11 3 0	3 in.	13 2 0

GLAZED BRICKS—

Best White, Ivory, and Salt Glazed Stretchers ..	24 0 0	D'ble Str'tch'rs	32 10 0
		D'ble Headers	29 10 0
		One Side and two Ends ..	33 10 0
Headers.....	23 10 0	Two Sides and one End	34 10 0
Quoins, Bullnose and 4½in. Flats	30 10 0	Splays and Squints.....	32 0 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours, Hard Glaze, £5 10s. extra over white.

	s. d.		
Thames Ballast	14 0	per yard,	delivered 2 miles radius Paddington.
Fit Sand	17 0	" "	
Thames Sand	19 0	" "	
Best Washed Sand	19 0	" "	
½ in. Shingle for Ferro-Concrete	19 0	" "	
¼ in. " "	20 0	" "	

Per ton delivered in London area in full van loads.

	£ s. d.		£ s. d.
Best Portland Cement. British Standard Specification Test.....	3 10 6	..	3 16 0

63/6 alongside at Vauxhall in 80-ton lots.

Ferrocrete per ton extra on above 10 0

NOTE.—The sacks are charged at 1s. 9d. each and credited at 1s. 6d. each if returned in good condition within three months, carriage paid.

Best Ground Blue Lias Lime 2 8 0 at rly. depot.
Grey Stone Lime 61s. 0d. per ton delivered in City and Central districts.
Stourbridge Fireclay in s'cks 37s. 8d. per ton at rly. dpt.

STONE.

	s. d.
BATH STONE—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R.. per ft. cube.....	3 2½
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R.. per ft. cube	3 5½
Do. do. delivered on road wagons at Nine Elms Depot	3 6½
PORTLAND STONE— Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L.& S.W.R., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube	4 11½
Do. do. delivered on road wagons at above stations, per ft. cube..	5 0½

White basebed, 3d. per ft. cube extra.

NOTE.—½d. ft. cube extra for every foot over 20 ft. *average*, and ½d. beyond 30 ft.

	s. d.
YORK STONE, BLUE—*Robin Hood Quality.* Delivered at any Goods Station London.	
6 in. sawn two sides landings to sizes (under 30 ft. super.) .....Per Ft. Super	6 1½
6 in. rubbed two sides, ditto ..... "	6 7½
3 in. sawn two sides slabs (random sizes) "	2 7
2 in. to 2½ in. sawn one side slabs (random sizes) ..... "	1 8
1½ in. to 2 in. ditto, ditto ..... "	1 5
HARD YORK— Delivered at any Goods Station London.	
Scappled random blocks .....Per Ft. Cube	7 6
6 in. sawn two sides landing to sizes (under 40ft. super.) .....Per Ft. Super	6 6
6 in. rubbed two sides ditto ..... "	7 2
4 in. sawn two sides slabs (random sizes) "	3 4
3 in. ditto. ditto "	2 10
2 in. self-faced random flags ..Per Yard Super	9 9

WOOD.

GOOD BUILDING DEAL.

Inches	£ s.	
6 × 11	36 0	per standard
6 × 9	35 0	"
4 × 8	30 0	"
4 × 7	30 0	"
3 × 8	30 0	"
3 × 7	25 0	"
2½ × 7	25 0	"
3 × 6	25 0	"
3 × 11	34 0	"
2 × 11	32 0	"
3 × 9	30 0	"
2½ × 9	30 0	"
3 × 4½	20 10	"
3 × 4	20 10	"

PLANED BOARDS.

1 × 11	42 10	"
1 × 9	37 10	"

PLAIN EDGE FLOORING.

Inches		
½	20/-	per square
¾	22/6	"
1	25/-	"
1¼	32/6	"
1½	44/-	"

TONGUED AND GROOVED FLOORING.

Inches		
1	25/-	per square
1¼	32/6	"
1½	44/-	"

WOOD (*Continued*).

MATCHINGS (BEST).

Inches		
½	17/6	per square
¾	22/6	"
1	25/-	"

Inches	BATTENS.	s. d.	
½ × 2		3 0	per 100 ft.

SAWN LATHS.

Per bundle	0 4	0

Dry Wainscot Oak, per ft. super, as inch	0 2 6	to	0 3 0		
¼ in. do. do.	0 1 10½	to	0 2 6		
Dry Mahogany—Honduras, Tabasco, African, per ft. super, as inch	0 2 3	to	0 3 0		
Cuba Mahogany	0 3 6	to	0 4 0		
Teak (Rangoon, Moulmein or Java), per load.. ..	52 10 0	to	55 0 0		
American Whitewood planks, per ft. cube ..	0 16 0	to	0 18 0		
Best Scotch Glue, per cwt.	7 2 0	to	—		
Liquid Glue, per cwt.....	4 18 0	to	6 0 0		

SLATES.

1st quality slates from Bangor or Portmadoc in truck load delivered London area. Per 1,000 of 1,200.

		£ s. d.
Best Blue Bangor Slates,	24 by 12	46 10 0
" " "	22 by 12	42 5 0
First quality " "	22 by 11	39 0 0
" "	20 by 12	37 2 6
Best Blue Portmadoc "	20 by 10	31 15 0
" "	18 by 10	26 5 0
First quality "	18 by 9	23 2 6
" "	16 by 10	22 0 0
" "	16 by 8	17 2 6

TILES.

	Per 1,000 f.o.r. London. £ s. d.
Best machine-made tiles from Broseley or Staffordshire district.....	7 0 0
Ditto hand-made ditto.....	7 15 0
Ornamental ditto	8 0 0
Hip and valley tiles (per dozen)	0 12 0

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION PER TON—	£ s. d.
R. S. Joists, cut and fitted	14 10 0
Plain Compound Girders	16 10 0
Stanchions	18 0 0
In Roof Work	22 0 0

WROUGHT IRON TUBES AND FITTINGS—
(Discount off List for lot of not less than £15 net value delivered direct from Works. 5 per cent. less above gross discounts, carriage forward if sent from London Stocks.)

Tubes. (all sizes).	Fittings. Up to 2".	Fittings. Over 2".	Flanges. Up to 2".	Flanges. Over 2"
Gas ....47½% ..	45 %	50 % ..	60 %	65 %
Water ..41½% ..	40 %	45 % ..	55 %	60 %
Steam ..35 % ..	35 %	40 % ..	50 %	55 %
Galv'd—				
Gas ..32½% ..	37½%	42½% ..	52½%	57½%
Water 25 % ..	32½%	37½% ..	47½%	52½%
Steam 17½% ..	27½%	32½% ..	42½%	47½%

L.C.C. COATED SOIL PIPES—London Prices ex works.

Pipe.	s. d.	Bends, stock angles.	s. d.	Branches, stock angles.	s. d.
2 in. per yd. in 6fts plain	3 10½	.. 3	4	.. 4	0
2½ in. "	.. 4 8	.. 3	8	.. 5	0
3 in. "	.. 5 6½	.. 4	0	.. 6	0
3½ in. "	. 6 1	.. 5	0	.. 7	0
4 in. "	..*6 10½	.. 5	8	.. 8	0

RAIN-WATER PIPES, &c.

Pipe.	s. d.	Bends, stock angles.	s. d.	Branches, stock angles.	s. d.
2 in. per yd. in 6fts. plain	2 6½	.. 2	0	.. 2	8
2½ in. " "	.. 2 9½	.. 2	4	.. 3	2½
3 in. " "	.. 3 4½	.. 2	10	.. 4	3
3½ in. " "	.. 4 0	.. 3	4	.. 5	0
4 in. " "	.. 4 6	.. 4	1½	.. 6	1

L.C.C. DRAIN PIPES.—9 ft. lengths. London Prices per yd.: 4 in., 5/0. .. 5 in., 7/2. .. 6 in., 8/9.

	Per ton in London. £ s. d.		£ s. d.
IRON— Common Bars	13 10 0	to	14 10 0
Staffordshire Crown Bars — good merchant quality	14 10 0	..	15 10 0
Staffordshire "Marked Bars"	17 10 0	..	18 10 0
Mild Steel Bars	12 10 0	..	13 10 0
Steel Bars. Ferro-Concrete quality, basis price ..	12 10 0	..	13 10 0
Hoop Iron, basis price ..	17 0 0	..	18 0 0
" Galvanised ..	31 0 0	..	33 0 0
Soft Steel Sheets, Black— Ordinary sizes to 20 g.	15 0 0	..	16 0 0
" " " 24 g.	16 0 0	..	17 0 0
" " " 26 g.	17 10 0	..	19 10 0
Sheets Flat Best Soft Steel, C.R. & C.A. quality— Ordinary sizes, 6ft. by 2ft. to 3ft. to 20 g.	21 0 0	..	22 0 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 22 g. and 24 g.....	22 0 0	..	23 0 0
Ordinary sizes, 6ft. by 2ft. to 3ft. to 26 g...	24 0 0	..	26 0 0
Flat and Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 9ft. 20 g.	21 10 0	..	22 10 0
Ordinary sizes, 6ft. to 9ft. 22 g. and 24 g.	22 0 0	..	23 0 0
Ordinary sizes, 6ft. to 9ft. 26 g.	24 0 0	..	25 0 0

METALS (*Continued*).

	Per ton in London. £ s. d.		£ s. d.
Sheets Galvanised Flat, Best quality— Best Soft Steel Sheets, 6ft. by 2ft. to 3ft. to 20g. and thicker ..	27 0 0	..	28 0 0
Best Soft Steel Sheets, 22 g. and 24 g.	28 0 0	..	29 0 0
Best Soft Steel Sheets, 26 g.	30 0 0	..	31 0 0
Cut Nails, 3in. to 6in. ..	24 10 0	..	25 10 0

(under 3in. usual trade extras.)

METAL WINDOWS—Standard sizes suitable for complete houses, including all fittings, painting two coats, and delivery to job, average price about 1/7 to 1/10 per foot super.

LEAD, &c.

Delivered in London.	£ s. d.		
LEAD—Sheet, English, 4 lb. and up	34 0 0	..	—
Pipe in coils	34 10 0	..	—
Soil Pipe	37 0 0	..	—
Compo pipe	38 0 0	..	—

NOTE—Country delivery, 30s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra.

Old lead, ex London area, at Mills ..... per ton	20 0 0	..	—
Do., ex country, carriage forward..... per ton	21 0 0	..	—
COPPER— Strong Sheet ....per lb.	0 2 3	..	—
Thin " .... "	0 2 4	..	—
Copper nails .... "	0 2 3	..	—
Copper wire .... "	0 2 4	..	—
TIN—English Ingots "	0 1 9	..	—
SOLDER—Plumbers' "	0 0 10	..	—
Tinmen's..... "	0 1 0	..	—
Blowpipe ..... "	0 1 3	..	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

Per Ft.		Per Ft.	
15 oz. fourths	4½d.	32 oz. fourths	9½d.
" thirds	5½d.	" thirds	11d.
21 " fourths	6½d.	Obscured Sheet, 15 oz.	7d.
" thirds	6½d.	21 "	9d.
26 " fourths	7½d.	Fluted and Enamelled 15 "	11d
" thirds	8½d.	Enamelled 21 "	1/2

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

Per Ft.	
¼ Rolled plate	4½d.
⅜ Rough rolled	6d.
½ Rough rolled	6½d.
Figured Rolled, Oxford Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white	7d.
Ditto, tinted	9½d.
Rolled Sheet	6d.
White Rolled Cathedral.....	5½d.
Tinted do.	7½d.

Cast Plate is same price as rough rolled.

PAINTS, &c.

	£ s. d.
Raw Linseed Oil in pipes..... per gallon	0 3 9
" " " in barrels .... "	0 3 10
" " " in drums .... "	0 3 11
Boiled " " in barrels .... "	0 4 2
" " in drums .... "	0 4 4
Turpentine in barrels ..... "	0 6 4
" in drums (10 gall.) ... "	0 6 7
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)	54 5 0
GENUINE WHITE LEAD PAINT— "Father Thames," "Nine Elms," "Park," "Supremus" and other best brands (in 14 lb. tins) not less than 5 cwt. lots .....per ton delivered	76 0 0
Red Lead, Dry (packages extra) .. per ton	37 0 0
Best Linseed Oil Putty ..... per cwt.	0 17 0
Filecol..... per cwt.	0 15 6
Size. X D Quality..... fkn.	0 4 6

VARNISHES, &c.

Per gallon.	£ s. d.
Oak Varnish.....Outside	0 15 0
Fine ditto ..... ditto	0 17 6
Fine Copal ..... ditto	1 1 6
Pale Copal ..... ditto	1 2 6
Pale Copal Carriage ..... ditto	1 4 6
Best ditto ..... ditto	1 14 6
Floor Varnish..... Inside	0 19 0
Fine Pale Paper ..... ditto	0 18 0
Fine Copal Cabinet ..... ditto	1 2 6
Fine Copal flatting ..... ditto	1 0 6
Hard drying Oak ..... ditto	0 18 0
Fine Hard drying Oak ..... ditto	0 19 0
Fine Copal Varnish ..... ditto	1 0 6
Pale ditto ..... ditto	1 2 6
Best ditto ..... ditto	1 14 6
Best Japan Gold Size.....	0 12 6
Best Black Japan	0 18 0
Oak and Mahogany Stain (water)	0 17 6
Brunswick Black	0 11 0
Berlin Black.....	0 16 6
Knotting (patent)	1 16 0
French and Brush Polish	1 8 0
Liquid Dryers in Terebine	0 13 6
Cuirass Black Enamel	0 7 0

* The information given on this page has been specially compiled for THE BUILDER and is copyright. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

CURRENT PRICES FOR BUILDING WORK IN LONDON.*

EXCAVATOR.

		s.	d.
Digging and throwing or wheeling and filling carts, and carting away to shoot—6 ft. deep	per yard cube	15	6
Add if in clay	„ „	1	9
Add for every additional depth of 6 ft.	„ „	1	3
Planking and strutting to trenches	per foot super	0	7
Do. to sides of excavation, including shoring	„ „	1	2

CONCRETOR.

		s.	d.
Portland cement concrete in foundation 1 to 6	per yard cube	42	0
Add if in underpinning in short lengths	„ „	9	6
Add if in floors 6 in. thick	„ „	3	10
Add if in beams	„ „	4	9
Add if aggregate 1 : 2: 4	„ „	12	0
Add for hoisting not exceeding 10 ft. beyond the first 10 ft.	„ „	4	0

BRICKLAYER.

		£	s.	d.
Reduced brickwork in lime mortar and Fletton bricks	per rod	38	10	0
Add if in stocks	„	8	10	0
Add if in Staffordshire blues	„	25	10	0
Add if in Portland cement and sand	„	3	10	0

FACINGS.

		s.	d.
Extra for facing in English or Flemish bond for every 10s. per 1,000 over the price of the common bricks	per ft. super	0	0	1½

POINTING.

		s.	d.
Neat flat strucks or weathered joint	„ „	0	0	3

ARCHES.

		s.	d.
Extra only to the price of ordinary brickwork :—			
Fair external in half brick rings	„ „	0	0	11½
Axed in stocks	„ „	0	1	11
Rubbed and gauged jointed in putty camber or segmental	„ „	0	6	8

SUNDRIES.

		s.	d.
Damp course in double course of slates breaking joint and bedded in Portland cement	„ „	0	1	5
Setting ordinary register grates and stoves	each	1	1	0
Setting kitchener, including forming flues, &c., with all necessary fire bricks	„	5	5	0

ASPHALTER.

		s.	d.
Half-inch horizontal damp course	per yard sup.	7	6
Three-quarter-inch vertical damp course	„ „	11	8
¾ inch on flats in two thicknesses	„ „	8	6
Angle fillet	per foot run	0	3
Skirting and fillet 6 in. high	„ „	1	4

MASON.

		s.	d.
York stone templates fixed	per foot cube	16	3
York stone sills fixed	„ „	28	6
Bath stone and all labour fixed	„ „	15	0
Portland stone fixed	„ „	23	0

SLATER.

		s.	d.
Welsh 16 in. × 8 in. 3 in. lap, including nails	per square	98	0
Do. 20 in. × 10 in. Do. Do.	„	115	0
Do. 24 in. × 12 in. Do. Do.	„	117	6

CARPENTER AND JOINER.

		s.	d.
Fir framed in plates	per foot cube	6	6
Do. joists	„ „	7	6
Do. roofs, floors and partitions	„ „	7	6
Do. trusses	„ „	9	6

		¾″	1″	1¼″	2″
Deal rough close boarding	per sq.	42/-	48/-	56/-	85/-

		s.	d.
Flat centering for concrete floor, including struts or hangers	„	63	0
Do. to beams	per ft. sup.	1	6
Centres for arches	„	2	0
Gutter boards and bearers	„	1	6

FLOORING.		¾″	1″	1¼″	1½″
Deal-edges shot	per sq.		49/-	58/-	67/-
Do. tongued and grooved	„		54/-	65/-	72/-
Do. matchings	„	45/-	55/-		
Moulded skirting, including backings and grounds	per ft. sup.	1/8	2/1	2/3	2/9

SASHES AND FRAMES.

		s.	d.
One-and-a-half moulded sashes or casements	per foot super	1	11
Two Do. Do. Do.	„ „	2	4½
Add for fitting and fixing	„ „	0	6
Deal-cased frames with 1 in. inner and outer linings, 1½ in. pulley stiles tongued to linings, hard wood sills with 2 in. moulded sashes in squares double hung, double hung with pulleys, lines and weights; average size	„ „	4	9

DOORS.		1½″	1¾″	2″
Two-panel square framed	per ft. sup.	2/6	2/9	2/11
Four-panel Do.	„	2/10	3/2	3/5
Two-panel moulded both sides	„	3/2	3/5	3/8
Four-panel Do. Do.	„	3/6	3/9	4/-

CARPENTER AND JOINER—continued.

FRAMES.

		s.	d.
Deal wrot moulded and rebated	per foot cube	15	6

		1″	1¼″	1½″
Plain deal jamb linings framed	per ft. sup.	1/11	2/-	2/3
Deal shelves and bearers	„	1/8	1/10	2/1
Add if cross tongued	„	2d.	2d.	2d

STAIRCASES.

	1″	1¼″	1½″	2″	2½″
Deal treads and risers in and including rough brackets	2/3	2/6	2/11	—	—
Deal strings wrot on both sides and framed	1/9	2/1	2/3	2/9	—

		s.	d.
Housings for steps and risers	each	0	11½
Deal balusters, 1 in. × 1¼ in.	per ft. run	0	9
Mahogany handrail; average 3 in. × 3 in.	„ „	6	0
Add if ramped	„ „	11	10
Add if wreathed	„ „	23	9

FIXING ONLY IRONMONGERY (INCLUDING SCREWS).

6 in. barrel bolts	8½d.	Rim locks	2/4½
Sash fasteners	11½d.	Mortice locks	5/3
Casement fasteners	1/5	Patent spring hinges and letting in to floor and making good	19/-
Casement stays	1/2		
Cupboard locks	1/5		

FOUNDER AND SMITH.

		s.	d.
Rolled steel joists	per cwt.	19	0
Plain compound girders	„	22	0
Do. stanchions	„	25	0
In roof work	„	30	0

RAIN-WATER GOODS.

		3″	4″	5″	6″
Half-round plain rebated joints	ft. run	1/11	2/4½	3/7	4/-
Ogee Do. Do.	„	2/4½	3/1	3/10	4/9
Rain-water pipes with ears	„	2/9	3/7		
Extra for shoes and bends	each	4/4	5/11		
Do. stopped ends	„	1/11	2/4½	3/7	4/-
Do. nozzles for inlets	„	2/2	2/7	3/10	4/3

PLUMBER.

		s.	d.
Milled lead and laying in flashings and gutters	per cwt	56	0
Do. Do. in flats	„	52	0
Extra labour and solder in coated cesspools	each	7	4
Welt joint	per ft. run.	0	6
Soldered seam	„ „	1	10
Copper nailing	„ „	0	7

		½″	¾″	1″	1½″	2″	4″
Drawn lead waste	per ft. run	10d.	1/6	1/9	3/1	3/10	
Do. service	„	1/5	1/11	2/3	3/6		
Do. soil	„						6/2
Bends in lead pipe	each					3/3	8/2
Soldered stop ends	„	1/2	1/8	2/1	2/10	3/6	
Red lead joints	„	11d.	1/-	1/3	1/11	2/4	4/10
Wiped soldered joints	„	2/10	3/6	4/-	4/11	6/6	9/9
Lead traps and cleaning screws	„				14/7	19/6	
Bib cocks and joints	„	6/4	9/7	15/4	41/-		
Stop cocks and joints	„	15/4	17/2	25/8	64/-		

PLASTERER.

		s.	d.
Render, float and set in lime and hair	per yard sup.	3	2
Do. Do. Sirapite	„ „	3	7
Do. Do. Keen's	„ „	4	9
Add sawn lathing	„ „	1	9
Add metal lathing	„ „	3	0
Portland cement screed	„ „	2	9
Do. plain face	„ „	4	6
Mouldings in plaster	per 1 girth	0	3
One-and-a-half granolithic pavings	per yard sup.	6	7

GLAZIER.

		s.	d.
21 oz. sheet plain	per foot sup.	1	1
26 oz. Do.	„ „	1	4
Obscured sheet	„ „	1	8
⅛ in. rolled plate	„ „	1	0
¼ in. rough rolled or cast plate	„ „	1	1
¼ in. wired cast plate	„ „	1	7

PAINTER.

		s.	d.
Preparing and distempering, 2 coats	per yard sup.	1	3
Knotting and priming	„ „		8
Plain painting 1 coat	„ „	1	0
Do. 2 coats	„ „	1	9
Do. 3 coats	„ „	2	6
Do. 4 coats	„ „	3	3
Graining	„ „	2	8
Varnishing twice	„ „	2	0
Sizing	„ „	0	4
Flatting	„ „	0	8
Enamel	„ „	1	6
Wax polishing	per foot sup	0	10½
French polishing	„ „	1	3
Preparing for and hanging paper	per piece	2/- to 4/-	

* These prices apply to *new buildings only*. They cover superintendence by foreman and carry a profit of 10% on the prime cost without establishment charges. A percentage of 1½ should be added for Employers' Liability and National Health and Unemployment Acts and from 1s. 6d. per £100 for Fire Insurance. The whole of the information given on this page is copyright.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach him not later than Tuesday evening.

***Denotes accepted. † Denotes provisionally accepted.**
‡ Denotes recommended for acceptance.
§ Denotes accepted subject to modifications.

ASHTEAD (SURREY).—For erection of house. Mr. A. C. Williams, architect and surveyor, High-street, Epsom :—

*Cropley Brothers, Ltd., Epsom	£950

BIRMINGHAM.—For a proposed house, Lordswood-road, Harborne, for Mr. E. Hewitson. Mr. George Randle, architect, Smethwick :—

Fowke & Co.	£5,997
Dallow & Sons	5,350
W. Lees	5,345
B. Whitehouse & Sons	5,125
G. & H. Marshall	5,097
W. B. & F. T. Archer	4,998
*W. Jackson	4,990

CANNOCK.—For sewage scheme at Huntington, for the R.D.C. :—

*Morley & Son, Derby	£6,660

ESH WINNING.—For erection of eight bungalows, for the Lanchester R.D.C. Mr. T. E. Taylor, architect, Union Offices, Lanchester :—

Gradon, Durham	£5,744 0 0
Noble & Ward	5,277 10 0
W. Lodge, Durham	5,200 0 0
Bulmer, Annfield Plain	4,600 0 0
Douglas & Cook, Blyth	4,200 0 0
Southern, Dipton	4,098 0 0
Rutter, Esh Winning	4,000 0 0
Aynsley, Rowlands Gill	3,996 0 0
Shorter, Langley Park	3,965 11 4
Elcoat, Bearpark	3,888 0 0
Walker, Leadgate	3,800 0 0
Dobson & Bland, Langley Park	3,720 0 0
*Armstrong, Esh Winning	3,664 0 0

FOGGATHORPE.—For building a small Wesleyan chapel. Messrs. Empsall & Clarkson, architects, 7, Exchange, Bradford :—

*J. Allison & Sons, York	

GRAVESEND.—For constructing a new system of main drainage through a portion of the town, for the T.C. Mr. F. T. Grant, engineer; quantities by Messrs. Northcroft, Neighbour & Nicholson :—

A. G. Osenton, Reading	£142,894 15 1
Muirhead, McDonald & Wilson, London	103,861 15 8
G. E. Wallis & Sons, Maidstone	103,000 0 0
Roads & Public Works, Ltd., London	95,647 1 7
C. V. Buchan & Co., Southwick	81,581 0 0
Amended Tenders:	
Daniel T. Jackson, Barking	81,351 0 0
Edwards Construction Co., London	73,902 0 0
Unit Construction Co., London	65,000 0 0
John Mowlem, London	64,877 18 11
Consolidated Construction, London	63,984 11 8
G. Bell & Sons, London	62,554 0 0
Walter Jones & Sons, London	61,872 7 8
*Alfred Hardy & Co., Woking	61,314 15 6
P. & W. Anderson, London	60,884 0 0
Engineer's estimate	70,000 0 0

GREASBOROUGH.—For the erection of 12 houses, for the U.D.C. :—

*Mollekin & Sons, Maltby	£459 each

HASTINGS.—For forming lawns and paths, and constructing roadway at the new East Sussex Hospital site, Cambridge-road. Mr. P. H. Oxley, architect, 29, Havelock-road, Hastings :—

Murray, St. Leonards-on-Sea	916 2 0
Campbell, Kenyon & Co., Acton	878 14 0
S. Carey, Bexhill	849 7 6
Piper, Hastings	830 0 0
Hodson's, Ltd., Nottingham	736 0 0
Brailsford & Co., St. Leonards-on-Sea	693 0 0
*Hutchinson & Son, St. Leonards-on-Sea	581 13 6

HENDON.—For extension of the Brent Valley low-level sewer in Brent-street (stoneware and cast-iron pipe sewer), for the U.D.C. Mr. A. O. Knight, engineer, Hendon :—

Davidson & Sykes, London	£2,242 8 0
Hall, S., Bromley	1,677 8 6
Wareham & Johnson, Hornsey	1,510 0 0
Alexander Thomson & Co., London	1,459 19 0
Chas. Carter, London	1,447 0 0
D. R. Paterson, Ltd., Camden Town	1,403 6 0
A. L. & H. W. Chown, Northampton	1,399 4 0
Howard Farrow, Golders Green	1,374 5 0
C. W. Killingback, Finchley	1,332 0 0
*Wm. Moss & Sons, Ltd., London	1,284 0 0

ILKLEY.—For erection of residence. Messrs. Empsall & Clarkson, architects, 7, Exchange, Bradford :—

*W. Pitts & Sons, Shipley (*Mason and joiner*).	
*Crighton & Wright, Bradford (*Plumber and glazier*).	
*A. Frost, Bradford (*Plasterer and concretor*).	
*James Smithers, Bradford (*Slater*).	
*W. Hudson, Ilkley (*Painter*).	

IPSWICH.—For alterations and additions to Burlington Church and Infant Schoolrooms, London-road, for the Committee. Mr. John F. Slater, architect, Ipswich; Mr. C. Borrett, surveyor, 1, London-road, Ipswich :—

S. Smith, Ipswich	£508 0
E. Goodchild, Ipswich	477 0
Boyce & Sons, Ipswich	479 8
V. Marriott, Ltd., Ipswich	474 0
E. Eldon, Ipswich	462 0
A. S. Green, Ipswich	458 10
R. G. Seaman, Ipswich	447 10
*B. Bird, Ipswich	426 10

LINCOLN.—For supply of engine, pumps, &c., at the sewage works, for the T.C. :—

*Robey & Co.	£17,695

LONDON.—For repair of roof at Children's Infirmary, for the Metropolitan Asylums Board :—

Whitbys	£279 11
W. Hussey	178 0
T. W. Heath, Ltd.	165 16
H. A. Thomas & Son	126 5
*L. Kazak	120 0

LONDON.—Erection of steel fire escape bridges at Tooting Bec Mental Hospital Extension, for the Metropolitan Asylums Board :—

Herring & Son, Ltd., Chertsey	£3,495 0
Somerville Barnard Construction Co., Ltd., New Cross, S.E.	2,160 0
Ainley Bros., Yorkshire	1,977 15
W. Walker & Co., Bradford	1,950 0
E. Wood & Co., Ltd., E.C.	1,800 0
H. & J. Hollanders, East Ham	1,800 0
Wells, Ewart & Co., W.C.	1,710 0
C. A. & A. W. Haward, W.C.	1,592 0
Structural Engineering Co., Stratford, E.	1,506 0
G. Ellis & Co., S.E.	1,474 4
Askham & Palin, S.W.	1,309 12
T. W. Palmer & Co., Merton Abbey	1,130 0
*Foster Construction Co., Ltd., Plaistow	900 0
F. A. Norris & Co., E.C.	(Informal)

LONDON.—For repairs to pier at Long Reach Hospital, for the Metropolitan Asylums Board :—

J. Shelbourne & Co., E.C.	£895
Chafen & Newman, Ltd., S.E.	707
*Geo. Munday & Sons, Ltd., E.C.3	600

LONDON.—Supply of boiler, superheater, &c., at West Wickham pumping station, for the Metropolitan Water Board :—

Tetlow Bros.	£4,520 0
William Arnold & Co. (Hopkinson's fittings)	4,010 0
Ditto. (Dewrance's fittings)	3,940 0
Ditto. (Marsden & Stansfield fittings)	3,850 0
J. & J. Horsfield, Ltd. (Hopkinson's fittings)	3,752 0
Ditto. (Dewrance's fittings)	3,719 0
Yates & Thom, Ltd.	3,713 0
Daniel Adamson & Co., Ltd.	3,610 0
Galloways, Ltd. (Hopkinson's fittings)	3,394 0
Ditto. (Dewrance's fittings)	3,364 0
Tinker Shenton & Co., Ltd. (own fittings)	3,272 0
Tinkers, Ltd.	3,266 0
Holdsworth & Sons, Ltd.	3,145 10
Joseph Foster & Sons	3,125 0
Edwin Danks & Co. (Oldbury), Ltd.	3,100 0
John Thompson (Wolverhampton), Ltd.	3,087 10
Ditto	2,997 10
Clayton, Son & Co., Ltd. (Hopkinson's fittings)	2,979 0
James Carmichael & Co., Ltd.	2,889 0
Ditto. (Marsden & Stansfield fittings)	2,829 0
Ditto. (Miller, Dennis & Co.'s fittings)	2,729 0
Ruston & Hornsby, Ltd. (Hopkinson's fittings)	2,388 0
Fred. T. Danks (Winn's fittings)	2,382 10
Ditto. (Dewrance's fittings)	2,339 0
*H. & T. Danks (Netherton), Ltd. (Hopkinson's fittings)	2,255 0
Ditto. (Turnbull's fittings)	2,251 0
Ditto. (Winn's fittings)	2,210 0
Ditto. (own fittings)	2,200 0
Ditto. (Marsden & Stansfield fittings)	2,095 0

LONDON.—For repairs to property in Standish-road, Hammersmith, for the Metropolitan Water Board :—

Collins & Co.	£495 0
R. Gibson	495 0
W. J. Sidey	460 0
Somerford & Son	407 0
Carter & Salisbury	405 5
*Chapman & Son	395 0

LONDON.—For adaptation of buildings at the Eastern Fever Hospital, Homerton Grove, E.9. Mr. A. Saxon Snell, F.R.I.B.A., architect, 9, Bentinck-street, Manchester-square, W. 1. Quantities by Messrs. Woodbridge, Biggs and Gowland :—

Daley & Co., Acton	£16,669

LONDON.—For supply and fixing of boiler at Church-street Baths, for the Camberwell B.C. :—

*Buckleys (London), Ltd.	£2,125

LONDON.—For erection of chimney shaft at the destructor works, for the Lewisham B.C. :—

H. Woodham & Sons, Ltd.	£1,825 0
The Guild of Builders	1,595 0
R. Pennington & Co.	1,535 0
The Reading Boiler Setting Co.	1,470 0
H. & T. Danks, Ltd.	1,450 0
Dilliway & Elvy	1,408 0
O. Kennard	1,393 0
Custodis, Ltd.	1,346 4
J. Fox & Sons	1,342 0
G. T. Goulding	1,304 15
T. Warrington	1,297 0
H. Ford Clarke	1,296 0
W. Storrs, Sons & Co., Ltd.	1,239 0
Chimneys, Ltd.	1,104 0
The Steeplejack & Engineering Co., Ltd.	1,100 0

The Works Committee also considered four informal tenders and the explanatory letter accompanying them. A. E. Francis, Peterborough, quoted £939 for Peterborough radial bricks faced with Leicester radial bricks. These the Borough Surveyor considered satisfactory, and the Committee recommends that the tender of Mr. Francis be accepted.

MENSTON-IN-WHARFDALE.—For erection of residence. Messrs. Empsall & Clarkson, architects, 7, Exchange, Bradford :—

*P. F. Coffary, Halifax (*Mason and bricklayer*).	
*J. Rushworth & Sons, Leeds (*Carpenter and joiner*).	
*A. Wilkinson, Shipley (*Plumber and glazier*).	
*A. Routh & Son, Leeds (*Plasterer and concretor*).	
*James Smithers, Bradford (*Slater*)	
*W. Hudson, Ilkley (*Painter*).	

MIDDLESBOROUGH—For erection of cenotaph and ornamental gates, for the War Memorial Committee :—

*H. Coxhead & Co., Ltd., Middlesbrough, £12,000	

ORSETT.—For extension of sewer to housing site, for the R.D.C. :—

*W. & C. French, Buckhurst Hill	£2,294

PRESTONPANS.—For construction of an 8 in. main from Penston Service Reservoir, for the Combination Water Trust. Mr. R. Tulloch, Water Superintendent, Cockenzie :—

A. Robertson, Inverkeithing	£3,390
North of Scotland Transport Co., Ltd., Montrose	3,315
J. W. Houston & Hogg, Ltd., Glasgow	3,224
*David Templeton, Tranent	3,152

RAMSGATE.—For the adaptation of "Chatham House" for County School for Boys, for Kent Education Committee. Mr. W. H. Robinson, County Education Architect, Maidstone :—

G. H. Denne & Son, Deal	£5,526
T. T. Denne, Walmer	5,290
J. T. May, Broadstairs	5,290
G. J. Attwood & Co., Ramsgate	5,197
N. Smith & Son, Maidstone	5,163
G. Browning, Canterbury	5,067
Barden & Head, Maidstone	5,020
Cox Bros., Maidstone	4,980
J. Parkinson & Sons, Ltd., London	4,974
H. Friday & Sons, Erith	4,950
O. Marx, Folkestone	4,946
E. Dunn, Ramsgate	4,922
T. Horne & Co., Ramsgate	4,910
E. W. Martin, Ramsgate	4,900
J. Bodle, Ltd., Eastbourne	4,887
R. Merton Hughes, London	4,841
Grummant Bros., Ramsgate	4,799
J. B. Sharman, Ramsgate	4,792
‡D. Godden & Son, Ashford	4,555

LONDON.—For the structural works, &c., involved in the adaptation of the Eastern Hospital extension, for the Metropolitan Asylums Board :—

	Amount of tender.	Saving by making openings instead of fanlights in walls of cubicles.	Net.
Foster & Dicksee, Ltd., Rugby	£24,899 17 0	£525 0 0	£24,374 17 0
Galbraith Bros., Ltd., Camberwell	24,000 0 0	537 15 8	23,462 4 4
C. H. Boyd & Son, Ltd., W.	21,350 0 0	640 0 0	20,710 0 0
A. Vigor, Ltd., S.W.	20,470 0 0	520 0 0	19,950 0 0
Seymour Construction Co., Ltd., Barking	20,278 16 11	468 17 10	19,809 19 1
Bennett & Blowers, Cambridge	20,213 6 1	422 18 9	19,790 7 4
Chessums, Ltd., Tottenham	20,320 0 0	574 0 0	19,746 0 0
A. H. Inns, E.C.	18,852 19 0	647 7 6	18,205 11 6
W. Moss & Sons, Ltd., W.C.	17,924 0 0	560 0 0	17,364 0 0
J. McManus, Ltd., Hammersmith	17,822 4 1	605 10 7	17,216 13 6
Frost & Carter, Luton, Beds	17,358 0 0	421 0 0	16,937 0 0
A. Monk, Lower Edmonton	17,250 0 0	530 0 0	16,720 0 0
A. Fairhead & Son, Enfield	17,392 0 0	805 0 0	16,587 0 0
W. Daley & Co., Acton	16,669 0 0	428 0 0	16,241 0 0

SHEFFIELD.—Erection of 50 houses on the Stubbin Estate, for the T.C. :—
*James Laver & Sons..... £23,178

SMETHWICK.—For making town-planning roads in connection with Smethwick Housing Scheme :—
John Hunt & Sons, Smethwick.

STAFFORD.—For painting the working-class dwellings in Crooked Bridge-road, for the T.C. Mr. W. Plant, Borough Engineer, Stafford :—
*Emery & Co., Birmingham..... £138 15

STAFFORD.—For laying 4,200 yards of cast-iron pipes and castings, for the T.C. Mr. W. Plant, Borough Engineer, Stafford :—
*E. Morley & Sons, Derby.... £1,365 5 6

STAFFORD.—For making up Alliance-street, Izaak Walton-street, and a portion of Co-operative-street, for the T.C. Mr. W. Plant, Borough Engineer, Stafford :—
*Emery & Co., Birmingham—
Alliance-street £646 9 4
Izaak Walton-street 570 7 10 } £2,006 9 5
Co-operative-street.. 789 12 3

STANLEY.—Erection of 46 houses at South Stanley, for the U.D.C. :—
*Teamby, Sheffield £22,254

STIRLING.—Laying of 15 in. water pipe, for the Stirling Waterworks Commissioners :—
*J. Bryce, Ayr..... £6,400

TAUNTON.—Erection of 19 houses on Greenwa road site, for the T.C. :—
*F. & E. Smale..... £11,311

WARRINGTON.—For the erection of 73 houses on the Park-avenue site, for the T.C. :—
*J. Dolan & Son, Warrington..... £33,474

WEST HARTLEPOOL.—For construction of Chatham-road, for the Corporation. Mr. N. F. Dennis, Borough Engineer, Municipal Buildings, West Hartlepool :—
*W. Inglett, West Hartlepool.

WORTHING.—For wood block laying in Warwick-street, South-street, and Chapel-road, for the T.C. :—
J. Cronk & Sons £4,488 0 0
W. Griffiths & Co..... 4,203 13 4
The Acme Paving Co..... 4,188 12 4
J. Mowlem & Co..... 4,178 13 4
*Improved Wood Paving Co... 3,960 15 2

Skilled Employment and Apprenticeship Association.

The sixteenth annual report of the Skilled Employment and Apprenticeship Association states that during 1921 there was a growing interest in questions dealing with the employment of juveniles. Lord Chelmsford, in his report on an inquiry held with reference to this question, advocated that the Education Authority should assume the duty of finding employment for children leaving school, in accordance with the Education (Choice of Employment) Act of 1910, and the Association urged the London County Council to exercise its full powers under the above Act. During the year, 966 applications had been received from boys, and 1,047 from girls seeking employment.

PARQUET & WOOD-BLOCK FLOORING supplied and fixed complete in any locality. PARQUET DANCE FLOORS a speciality.—Send Particulars of requirements to TURPIN'S PARQUET FLOORING CO., 25, NOTTING HILL GATE LONDON, W.11.
Phone: PARK 1885.

J. GLIKSTEN & SON LIMITED
Specialities in
SEASONED HARDWOODS
MAHOGANY WALNUT JAPANESE, AMERICAN and WAINSCOT OAK, TEAK, WHITEWOOD, &c.
REGISTERED OFFICE AND WHARF:
CARPENTERS RD. STRATFORD LONDON E.15
Telephone: EAST 3771 (5 lines)
Telegrams: GLIKSTEN 'PHONE LONDON.

JOINERY,
Of every description and in any kind of Wood.
CHAS. E. ORFEUR, LTD.,
ESTIMATES ON APPLICATION.
COLNE BANK WORKS, COLCHESTER.
Telephone: 0235. Telegrams: "Orfeur, Colchester."

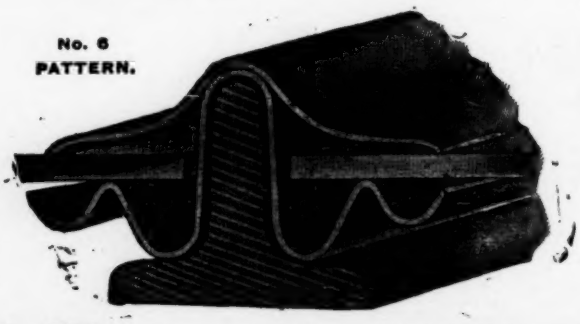
J. J. ETRIDGE, JR. Ltd
SLATING AND TILING
SLATE MERCHANTS
CONTRACTORS.
Inspections and Reports made on
OLD OR FAULTY ROOFS
in any part of the country.
Telephone: Avenue 4040 (two lines), or write
Bethnal Green Slate Works,
BETHNAL GREEN LONDON E.

300 SQUARES OF DRY JAPANESE
OAK FLOORING
1" or 1¼" x 4" or 4½"
Prepared T. & G. to required joint.
SYDNEY PRIDAY
& SONS. ESTD. 1880
25, Monument Street, E.C.3.
Telephone Nos.: MINORIES 1162 (2 lines

ASPHALTE WORK
SEND YOUR ENQUIRIES TO:—
F. J. L. Robertson
22, Oakdale Road, Streatham, S.W.16
Telephone:—STREATHAM 1044
ESTIMATES GIVEN FOR WORK IN TOWN OR COUNTRY.
BITUMEN DAMPCOURSES. ROOFING FELTS. ETC., ETC.

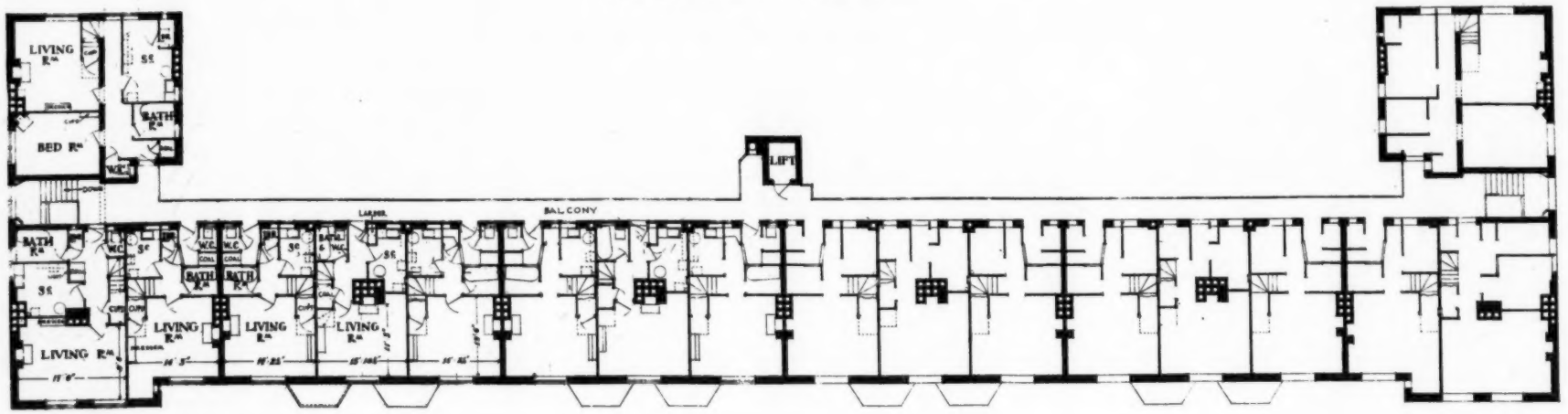
HIGH-CLASS
FLOORINGS
of every description in
WOOD BLOCKS. PARQUETRY
SEASONED T. & G. WAINSCOT OAK
TEAK AND MAPLE.
FACTORY AND ROADWAY PAVING
ALSO PANELLING IN OAK, WALNUT
MAHOGANY AND TEAK.
STEVENS & ADAMS
LIMITED
VICTORIA MILL, POINT PLEASANT
WANDSWORTH, S.W.18.
(Phone: Putney 1700, 2457)

Hospital & School Stoves
MAKERS OF
WRIGHT'S IMPROVED and also SHORLAND PATENT WARM AIR VENTILATING PATTERNS.
GEO. WRIGHT (LONDON) LIMITED,
19, Newman St., Oxford St., London, W.1.
Burton Weir Works, Rotherham.

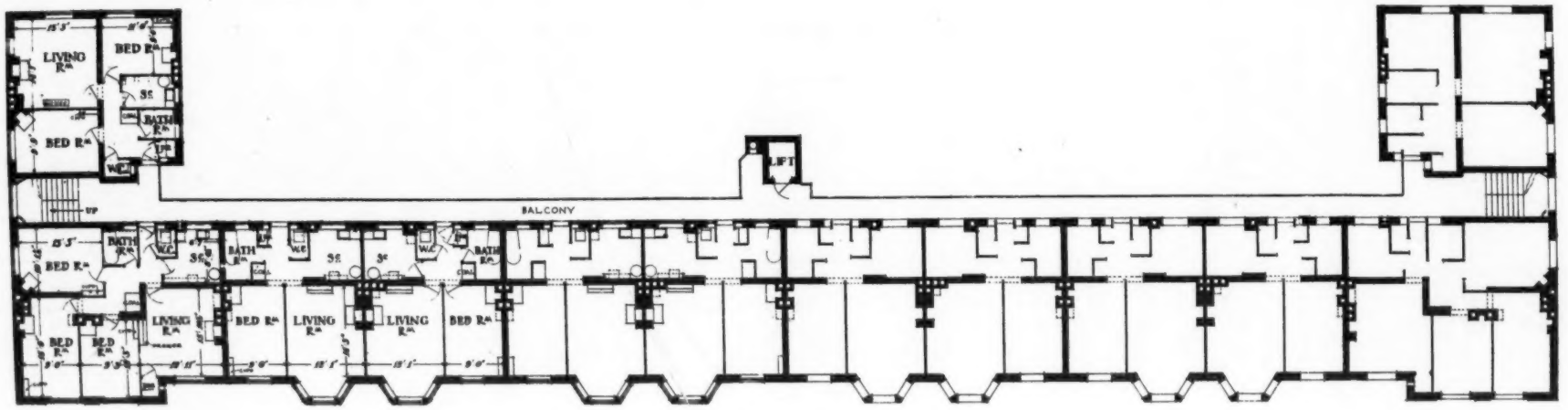
BRABY'S "DROP-DRY" GLAZING
ECONOMICAL. EFFECTIVE.
ESTIMATES FREE.
ALSO No. 8 PATTERN WITH WOOD CORE.

No. 6 PATTERN.
MANY THOUSANDS OF FEET FIXED TO ROOFS OF FACTORIES, WAREHOUSES, &c.
LOWEST PRICES.
F. BRABY & CO., LTD., 352-364, EUSTON RD., LONDON, N.W.1
Telegrams: "Courteous, Euroad, London." AND AT LIVERPOOL, BRISTOL, GLASGOW, FALKIRK, &c. Telephone No.: Museum 3032 (5 Lines)

LONDON COUNTY COUNCIL. TABARD GARDEN ESTATE.

GEOFFREY HOUSE.

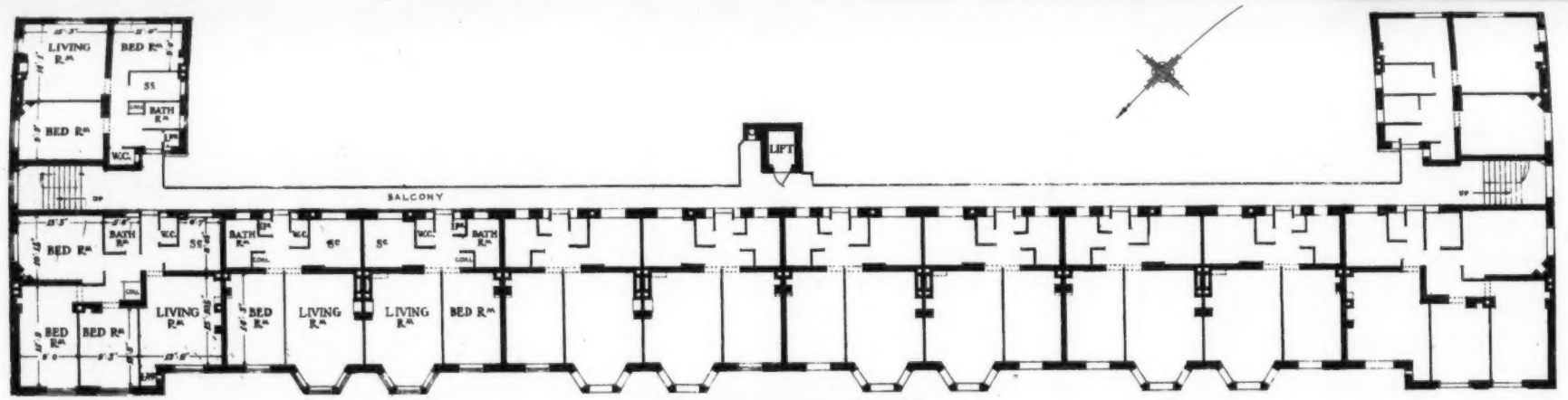


THIRD FLOOR PLAN.

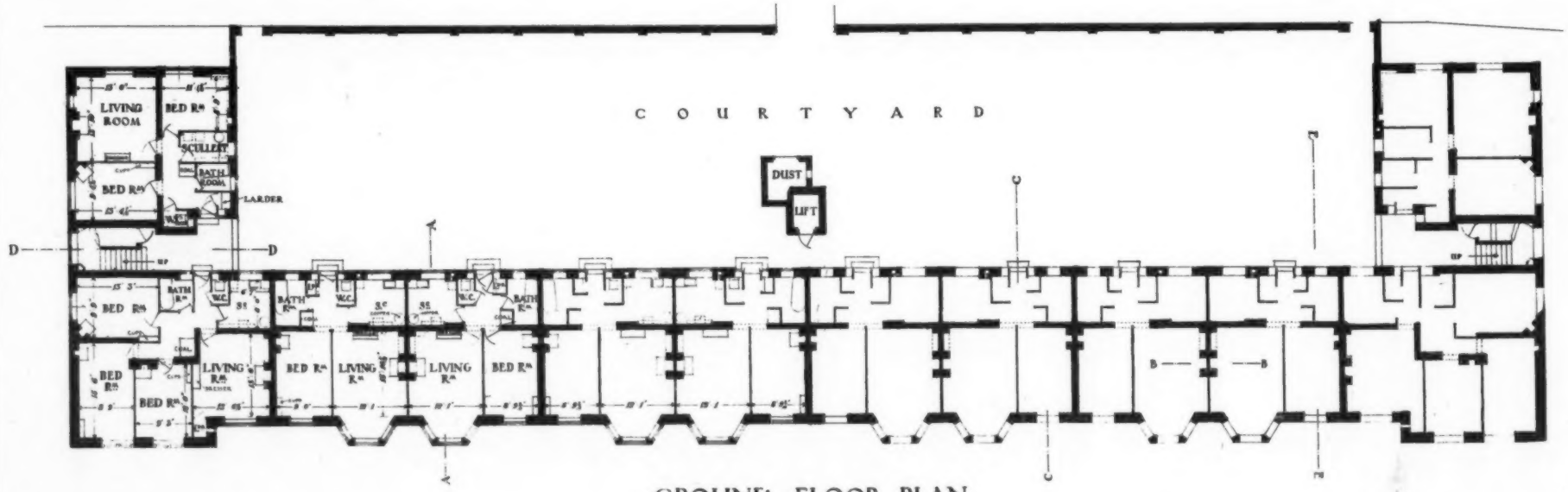


SECOND FLOOR PLAN.

SECOND FLOOR PLAN.



FIRST FLOOR PLAN.



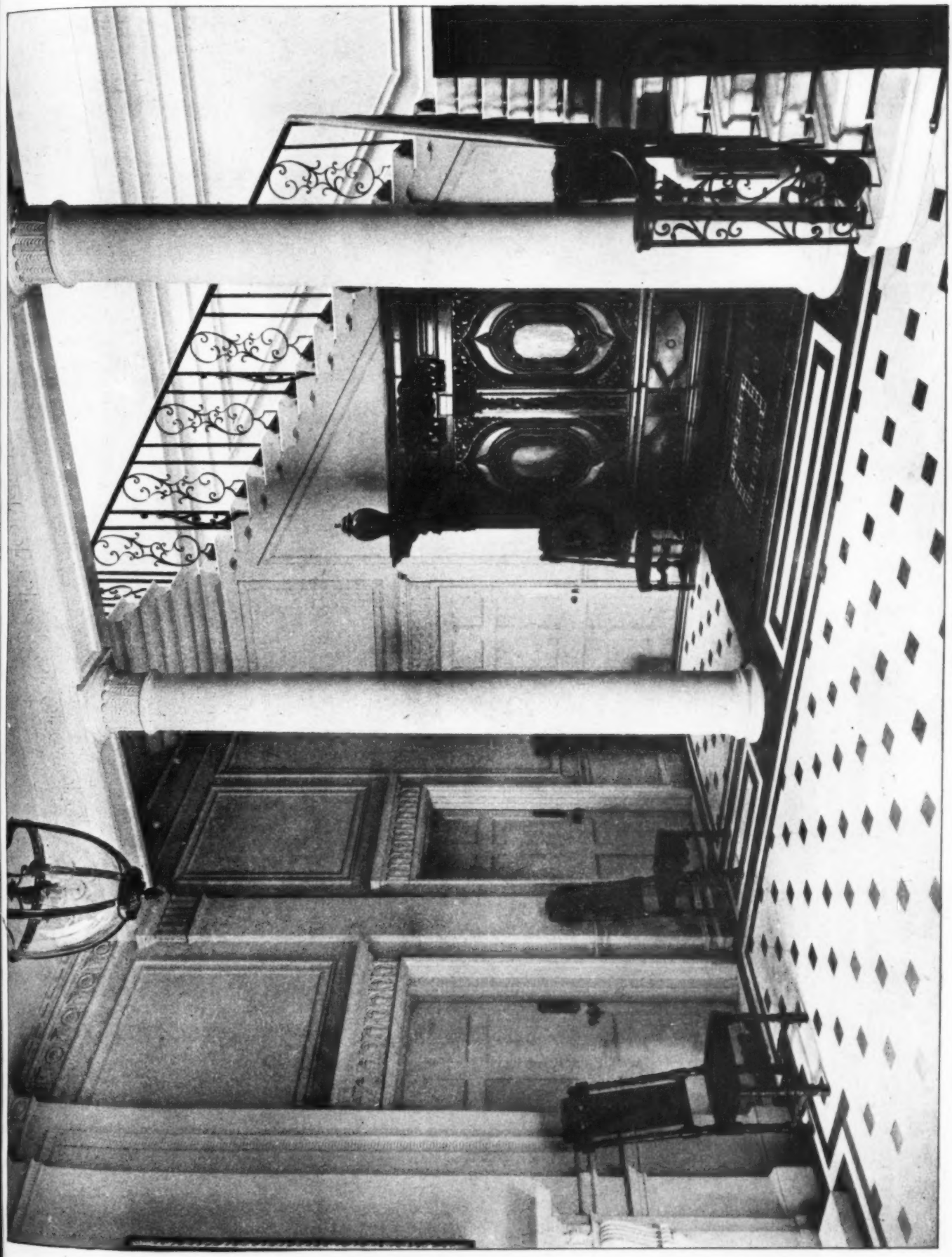
GROUND FLOOR PLAN.

MR. G. TOPHAM FORREST, F.R.I.B.A., ARCHITECT TO THE LONDON COUNTY COUNCIL.

NEW WING.

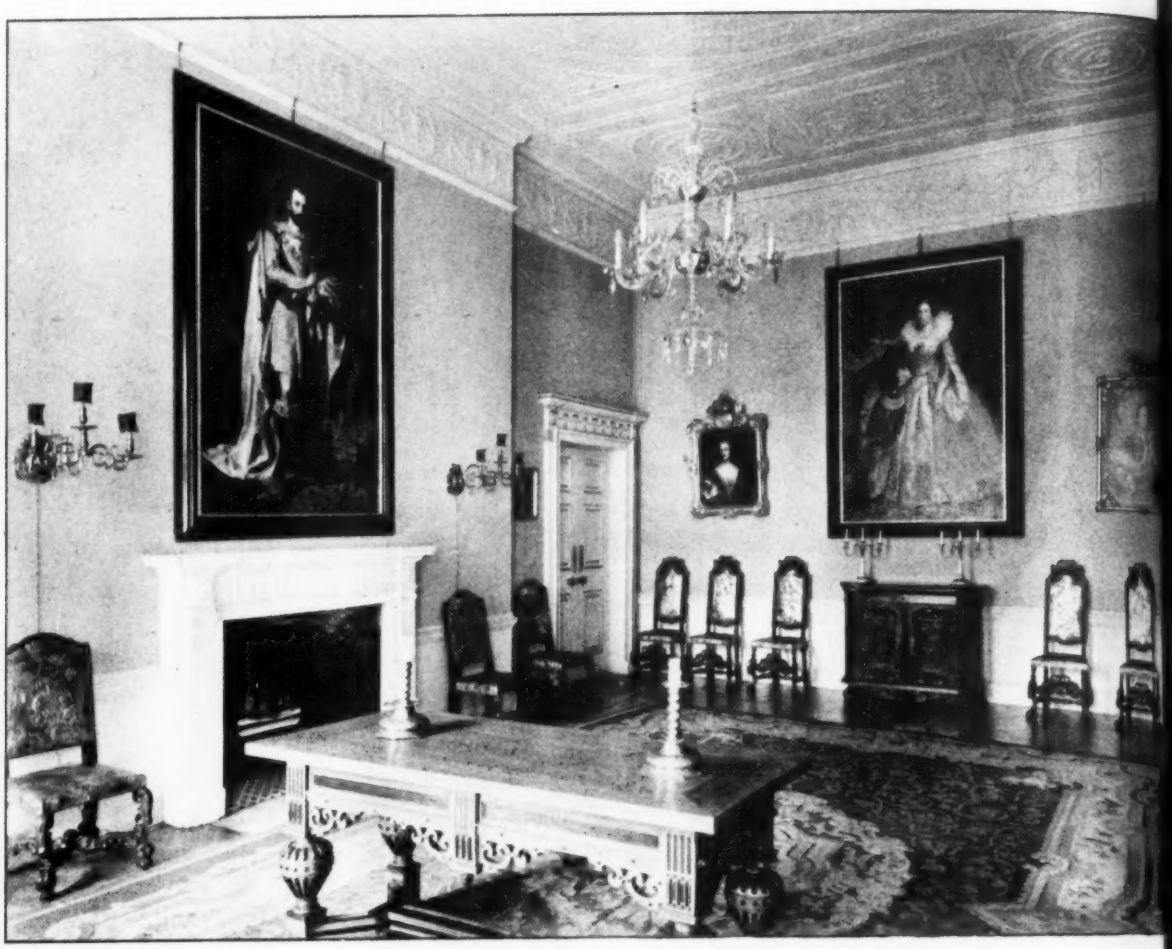
ENTRANCE TO CHANCELLERY.

SWEDISH LEGATION, MESSRS. NIVEN & WIGGLESWORTH, FF.R.I.B.A., ARCHITECTS.

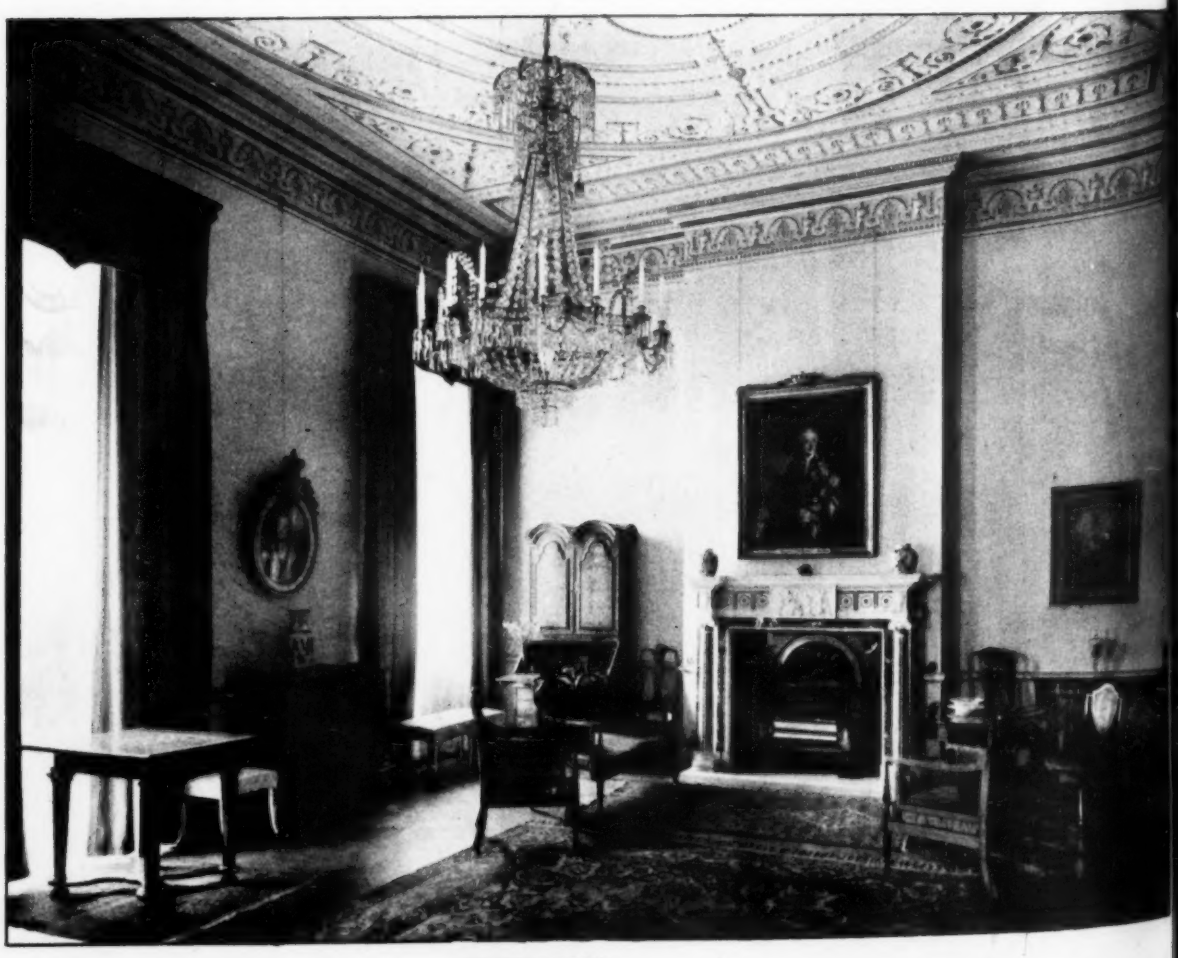


ENTRANCE HALL.

SWEDISH LEGATION, MESSRS. NIVEN & WIGGLESWORTH, FF.R.I.B.A., ARCHITECTS.



SITTING ROOM, ROYAL SUITE.



DRAWING ROOM.

SWEDISH LEGATION, MESSRS. [illegible] WIGGL[illegible]

BUSINESS ROOM.

DINING ROOM.

ESSRS. NIVEN & WIGGLESWORTH, FF.R.I.B.A., ARCHITECTS.